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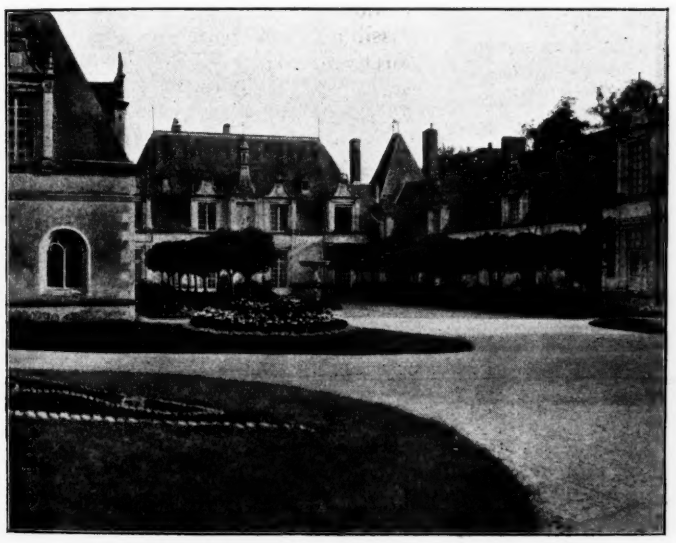

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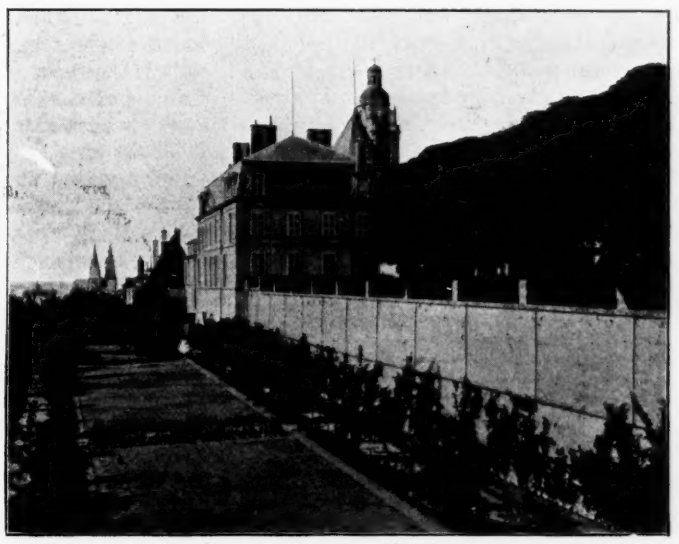


The Bishop's Palace, Blois.

In Illustration of Paper on the Architectural Association Excursion. (*See page* 500.)

EDUCATION AND EXAMINATION.

THE Revised Syllabus of the R.I.B.A. Intermediate and Final Examinations (see page 499) shows a marked advance on that now in force in that it gives more opportunity for the appraisement of ability and less for success by means of an accumulation of facts with or without the aid of the crammer.

The candidate is permitted to specialise to a greater extent than has hitherto been the case. Even in the Intermediate stage the inevitable bent of his mind towards the artistic or the scientific side is more fully recognised, while, though in these there are no optional subjects, practical questions only cover the minimum range demanded by the exigencies of architectural practice. In this final stage the candidate's thesis alone gives him an opportunity for selecting the branch of architecture towards which he feels his faculties direct him. He may either offer a study in historical development, one in the application of science to building problems, or an exposition of his powers of design; but, as this thesis carries more marks than all the practical subjects put together, the candidate's special studies appear to receive adequate recognition.

While admitting that the new syllabus is far superior to the present one, and that it is perhaps well suited to the present condition of architectural education, we do not think it should be regarded as a final or permanent standard test for admission to the architectural profession.

Professor Blomfield, in a lucid introductory note, explains that the aim of the Board of Architectural Education has been to "humanise" the examination, and unquestionably the revisions are all in favour of intelligent study as against the accumulation of heterogeneous information usually effected by means of "cramming." When we say that the new tests should not be regarded as permanent in their form we are bearing in mind the fact that education and examination must act and react on each other; this time developments in architectural education have opened the way to these improvements in the form of the examination, but the latter in its turn is carefully kept within the scope of preparation available for the candidate. Might not the examinations have gone a little beyond this, putting pressure on education to work up to their demands? For example, a design prepared in two days (even in conjunction with the testimonies of study) is a somewhat inadequate test of the skill that should entitle the aspirant to qualify as an architect, but it is enough to enable the candidate to exhibit as much as he has at present an opportunity of acquiring at most of the schools in this country.

It must be admitted, however, that it is useless to carry examining methods very far beyond the means of preparation available, and we must therefore look to our educational authorities to take the leading part in any movement for raising the standard of architecture by inculcating a sounder appreciation of its essential qualities.

These in their turn are hampered by the general indifference and lack of any widespread interest in this art. The less conscientious, fully aware that a high degree of artistic skill is not essential to the attainment of a good professional position, are inclined to shirk a long and arduous course of training unless forced

into it by the severity of the qualifying tests for which they must prepare themselves. Thus the schools would be helped by a well-conceived method of examination, while the examination can be strengthened step by step with improvements in education.

As regards the provision of a suitable incentive to the strenuous cultivation of the faculties to their highest pitch, we have yet much to learn from the French, who in their official recognition of the aims of successful students set an architectural standard impossible by our haphazard methods. Their Government system not only acts as an incentive to the artist, but also educates the layman, and impresses on him the value of the arts as a factor in the national life.

Something more than mere examination and something more than the award of prizes and studentships is needed. The student should be made to feel that his career is being watched by the highest exponents of his art in the interests of the nation, and that if he succeeds his achievements will be regarded as a national asset and the stepping-stones to the utilisation of his faculties in the most suitable fashion.

An examination by itself can do little; and Professor Blomfield seems to us to confuse cause and effect when he deplores the disappearance of the type of "student - scholar - architect" which existed at any rate as late as fifty years ago, and suggests that the effort now made in the reform of the examination would resuscitate him. The type he so rightly admires has been discouraged by causes quite outside the profession, and its educational methods and the revision of these will not bring it back unless accompanied by a successful effort to entirely alter the attitude of the public at large towards architecture and the allied arts. We do not say that architects have been free from blame in the degradation of their profession to "a merely mechanical business"; they are but members of the public, and have fallen under the same malevolent influences. It is quite right for them to try to set their house in order, but they must also seek and obtain the sympathies of those outside the profession if any permanent and far-reaching good is to result.

THE L.C.C. TRAMWAYS AND ST. PAUL'S.

IF we express our gratification at the postponement, by the London County Council, of the tramway scheme in connexion with St. Paul's Bridge it is in no spirit of hostility to the idea of tramway extension. On the contrary, we believe that the linking up of the north and south systems is a pressing traffic necessity. Tramways, like other human contrivances, have their defects; they may not be the final solution of our traffic problems, but in the meanwhile they are universally acknowledged to be an enormous practical convenience to the great body of the general public. As such any proposed scheme for connecting the north and south tramways through the City should be considered from the widest public point of view and not from that of the interests or prejudices of the property owners of the City.

Whatever may be the merits of the St. Paul's Bridge scheme in the eyes of the City authorities, we imagine that even its most ardent supporter would not put it forward as an ideal method of connecting the trams. Grudgingly, and of necessity, the City appears to have consented to the trams being brought within its sacred square mile; but only on condition that they were kept out of sight and out of mind in a tunnel.

It seems to us, however, that it is the duty of the London County Council, as the central authority for Greater London, to approach the question from an entirely different point of view. It is not their business to study the special interests of the City where they clash with those of London, or to look on this tramway scheme as a minor and inconvenient detail of a more important subject.

London, as Captain Swinton pointed out, needs a main through traffic route from the Angel to the Elephant and Castle; not just a narrow street tunnel, but a broad avenue or boulevard with tramways. This, as a general necessity for the convenience of seven millions of human beings, is, we take it, of even more importance to the State than the outraged feelings of the City Fathers. It is inconceivable that any reasonable human being who set out to create such a through traffic route would have deliberately chosen the method proposed by the St. Paul's Bridge scheme. As a local traffic convenience and as an addition to the amenities of the City, it could, no doubt, in competent hands, be made a great success and a useful means of disposing of the surplus funds of the Bridge House Estates; but as a through traffic route it is simply absurd, and we must say that we have always found it difficult to believe that anyone with the slightest knowledge of the subject could ever have seriously put it forward and supported it as such.

We have more than once pointed out that the natural through traffic route for this part of London is by way of Farringdon-street and Blackfriars Bridge, and we are glad to see that this idea receives the support of Captain Swinton. Being convinced that the more this question is discussed and thought over from the point of view of the traffic the more reasonable it will appear, we welcome the delay as giving more time for thought.

We are confident that when once the London County Council has grasped the importance of the question it will insist on a scheme which places the necessities of the general public first, while making such concessions to City interests or prejudices as humanity dictates. Surely it will never agree to the City riding rough-shod over the interests of the general public.

By all means let the City have its bridge, but let London have its through traffic artery also.

CHURCH, BELFAST.

The Archbishop of Armagh laid the foundation-stone on October 7 of the St. Doneardo Church, which will provide accommodation for 503 worshippers. The estimated cost of the work is 4,535*l.*, including fittings, and provision has been made for future additions to the transept. The contractors are Messrs. McIntyre Brothers, of Belfast, who are carrying out the work from the designs of Mr. E. H. Lingden Barker, architect, of London and Manchester.

NOTES.

Regent's Park and the Zoological Gardens.

IT seems to be the general view that almost insurmountable difficulties lie in the way of removing the Zoological Gardens to the Crystal Palace or any other site more remote from the centre of London than the present one. At the same time, the 34 acres occupied by the Society are manifestly inadequate, and another 20 acres of the Park are urgently required. We should feel a difficulty in supporting the alienation of so large a slice from the present area of the Park unless it were possible to give compensation to the public in some other way. Three years back we published an article on the linking up of our public parks, which included, among other suggestions, a boulevard continuing the Broad-walk to Parliament-hill, thus bringing Regent's Park and Hampstead Heath into organic connexion with each other. The adoption of such an improvement is still possible, and the public gain would be so great that it would then be possible to give up the 20 acres at the north edge of the Park, provided this area were judiciously selected in conjunction with a comprehensive improvement scheme. As a resort for recreation the clay levels of Regent's Park are far inferior to the heights of Hampstead and Highgate, and a well-defined link between the two would tend to draw the populace from the lower towards the higher and more exhilarating area. We are firmly convinced that this improvement is both desirable and practicable, and the necessities of the Zoological Gardens only introduce one more argument for its consideration.

The Crystal Palace.

ONE of the latest schemes for the future of the Crystal Palace, promulgated in a letter to the *Times*, is that it should be used as the home of "that Museum of Architecture and Sculpture that everyone interested in art, whether from the educational or the æsthetic point of view, so greatly desires to see established." We confess that we are not much in sympathy with this scheme. The writer of the letter wishes to see established in this country a museum of casts from architecture and sculpture on the lines of the Musée de Sculpture Comparée at the Trocadéro in Paris. But Sydenham does not bear the same relation to London that the environs of Passy do to Paris. The Trocadéro is reasonably accessible from any quarter in Paris; Sydenham is not reasonably accessible from the quarters in London in which those to whom a museum of the sort would be useful mostly dwell. The British Museum and South Kensington are easily accessible, and that is a matter which cannot be overlooked if we are to take into consideration the artist and student to whom their collections are of first importance. They must not on any account be placed out of the way, not even if to do so were to cause, according to the *Times* correspondent, "great rejoicing to the directors of those institutions." We have the greatest admiration for the casts at the Trocadéro, and we would like to see

such an orderly and logical collection in London, but not at the expense of the collections at the British Museum and South Kensington, and, in any case, certainly not gathered together at Sydenham. The collections in Bloomsbury and at Kensington have become part and parcel of the life and thought of those whom they chiefly concern (not the occasional excursionist or American "seeing the sights"), and they must not be removed without good cause. As for the Crystal Palace and its site, there is always the solution of the "open space," which requires no argument in our congested capital for its adoption.

The Protection of Ancient Monuments.

WE are glad to see that H.M. Office of Works, recognising the possibilities of the Acts of 1882 and 1900, is taking steps towards assuming further responsibilities in regard to the preservation of our ancient monuments, and has issued a letter to the County Councils, stating that the expense involved in guardianship would, in some cases, be more fittingly borne nationally than locally, and inviting the County Councils to draw attention to any monument worthy of protection, with a view to allocation of the responsibility to the appropriate authority. This is, at all events, a step in the right direction, and, as we may confidently look for further developments in the future, it is gratifying to see that the question is not being neglected.

Balliol Chapel.

A PROTEST from Messrs. Norman Shaw and Basil Champneys appears in the *Times* against the threatened destruction of Butterfield's chapel at Balliol College. Doubtless the work of this architect does not appeal to the sympathies of all, but its virility and originality should justify its preservation, at all events till a future period, when time will give a better standpoint from which to appraise its value. The best work of the XIXth century may possess factors of interest that we are not capable of properly appreciating at the present day, and we should deprecate undue haste in its destruction, even if we think we can substitute something better.

Whitechapel Art Gallery.

IT was a happy idea on the part of those who are responsible for the Whitechapel Art Gallery to decide upon an exhibition which would bring home to Londoners something of the history of this great city. The West have for some years gone East when Whitechapel holds an art exhibition, and it is safe to say that in the latitude of interest the present exhibition will box the compass. The appeal of its collection is extensive: it appeals to the historian, to the painter, to the topographer, to men of arts and crafts, to the collector of choice and ancient things, to the mere antiquarian gossip, with equal force. It may be compared in some respects to the collection at the Carnavalet Museum in Paris. The aim of the projectors has been, we may take it, first of all historical, the artistic quality of the particular exhibits being a secondary matter. It is therefore all the more astonishing that so much artistic delight can be derived from a gregarious collection in which artistic considerations are only incidental. We find, for instance, examples of Jean Tijou's ironwork and Grinling Gibbons's carving; unsuspected drawings of Hollar; a large number of the oil paintings of Samuel Scott, one of the few artists who could combine topographical accuracy with the painter's sentiment; Rowlandson, whose tragic, realistic impression of things was expressed with a certain quality of grim humour. Then there are the De Jonghes and Van de Veldes, which offer contrasts in method. We must not omit to mention Varley's "St. Pancras Church," Budd's "Greenwich," and particularly David Cox's "Old Whitehall with the Life Guards," although we should scarcely have expected David Cox to rank among the painters likely to be of topographical interest to London history. Architects will find much of interest in the collection; indeed, building of some phase or other forms the main subject of the mass of work of an illustrative character. And among the work of contemporary artists there are the pleasant water-colour drawings of Sir Ernest George and Mr. Frank Lishman to show the versatility, in other artistic mediums, of men of the drawing-board accustomed to the practice of a more geometric draughtsmanship.

The Oxford "High" and Overhead Tramway Systems.

THE Oxford City Council is to be congratulated on having rejected by forty-six votes to six the proposal to allow the installation of an overhead trolley system for the tramways down the High-street. We well remember the consternation which was caused when in about the year 1882 tramways were first permitted in "the High" at all, but the fact that the public have become habituated to horse tramways in this unique thoroughfare cannot be used as an argument for its desecration by the erection of poles and overhead wires. We understand that the installation of the overhead system over the whole of the tramways would effect a saving over a combined system of some 30,000*l.*, and we are glad to see that public spirit has prevailed over economy in this particular instance. Oxford had better be contented with the existing horse tramways than be guilty of an act of vandalism, and the local patriotism shown by the Council will be appreciated even beyond the confines of the British Isles.

The Railway Unrest.

SINCE our allusion to this subject last week a move has been made by the railway companies which, if not misinterpreted by the men, should go far to establish better relations between the two parties. Secure in the assurance recently given them that they will be permitted, if necessary, to recoup themselves from the trading and travelling public, substantial advances in wages have been promised, which will materially improve the conditions of railway service. It is to be hoped that some of the wild talk which has been indulged in during the last week will now be modified and the conciliatory attitude of the companies recognised and appreciated. We notice that several bodies of traders have already taken alarm at the threatened increase in rates and fares, and are up in arms against any advance. It may be remarked that there are ample safeguards against undue increases, and that the more such advances are spread over all classes of merchandise the less it will be felt in any particular industry. Indeed, considering the economies that are being effected by the gradual abolition of duplicate services and unnecessary competition, the amount to be raised by increased charges should not very seriously affect either passenger fares or goods rates.

THE ROYAL INSTITUTE OF BRITISH ARCHITECTS:

REVISED SYLLABUS OF THE EXAMINATIONS.

WE take the following particulars of the Revised Syllabus of the R.I.B.A. Examinations, which is to come into operation next year, from the last issue of the R.I.B.A. *Journal*.

The Preliminary Examination will remain unaltered.

INTERMEDIATE EXAMINATION.

Testimonies of Study.

Before being admitted to the Examination the candidate will be required to submit the Testimonies of Study Nos. 1, 2, 7, 8, and 9, enumerated in the present syllabus [see Kalendar]: also either No. 3 (Details of Classic Ornament) or No. 6 (Mediæval Ornament), and, instead of Nos. 4 and 5, sheets of measured drawings of a building, with the plottings and sketches. For these Testimonies marks will be awarded by the Examiners, who will be free to allot a larger number of marks to the drawings than has hitherto been permitted.

In addition to the general subjects of History and Building Construction, students will be required to take a special paper either in some period of History, in Mathematics and Mechanics, or in Elementary Design. An extra day will be apportioned for this additional subject.

One hundred marks will be allotted for the Testimonies of Study.

NOTE.—The existing Testimonies of Study will be an optional alternative until January, 1914.

Intermediate Examination Time Table.

(A) Principal Styles and General History of Architecture, and the Purpose of Architectural Features in relation to the Buildings in which they occur:—

Two papers occupying six and a half hours in all—250 marks.

(B) Construction:—

1. Simple Applied Construction in Elementary Design, and the Properties and Uses of Ordinary Building Materials.

2. Theoretical, including Stresses and Strains.

Two papers occupying six and a half hours in all—250 marks.

(C) In addition the candidate must select one of the following subjects:—

1. Historical Architecture—showing knowledge of one of the following periods, to be selected by the candidate:—(*a*) Greek and Roman; (*b*) Byzantine and Romanesque; (*c*) French and English Gothic; (*d*) Italian, French, and English Renaissance.

2. Mathematics and Mechanics—Algebra, up to and including the Binomial Theorem.—The Use of the Slide Rule.—Plane Trigonometry, including the Solution of Triangles.—Descriptive Geometry, including the Mensuration of Simple Plane and Solid Figures.—Simple Conic Sections treated geometrically. — General Statics and Dynamics, including Graphic Statics.

3. Design—dealing with simple subjects.

Paper (in one only of the above subjects) occupying four hours—200 marks.

Testimonies of Study—100 marks.

Total marks—800.

FINAL EXAMINATION.

Testimonies of Study.

Alternative Problems in Design, set by the Board of Architectural Education, will be published every two months in the *Journal* of the Institute.

Every candidate for the Final Examination will be required to submit as Testimonies of Sudy Designs in answer to at least four of the Institute Problems. These Designs, when they have been submitted to and approved by either the Council of one of the Allied Societies or by a Committee of the Board of Architectural Education, will be considered as qualifying the Student to enter for the Examination. Designs so submitted and approved will be marked in the Examination by the Examiners appointed by the Board.

Two hundred marks will be allotted for the Testimonies of Study.

NOTE.—The existing Testimonies of Study will be an optional alternative until January, 1914.

Final Examination Time Table.

(A) Design for a Building or Portion of a Building—350 marks.

Two days. At the end of the first day's sitting the candidate will be required to deposit with the Moderator the original draft of his project or a tracing of it.

(B) Construction, including Iron and Steel Construction, Ferro-Concrete, Shoring and Underpinning.

Two papers occupying six and a half hours—150 marks.

(C) Hygiene, including Drainage, Ventilation, Heating, Lighting, and Water Supply.

(D) The Properties and Uses of Building Materials.

(E) The Ordinary Practice of Architecture, including Specifications and the Law of Contracts.

Three papers occupying six and a half hours in all (50 marks each)—150 marks.

(F) The candidate must submit a thesis showing advanced and individual work in one only of the following subjects:—

1. Historical Architecture—implying as far as possible the direct study of actual historical buildings.

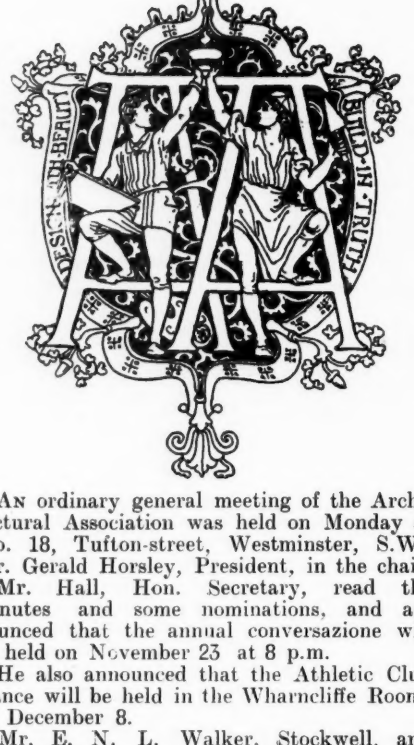
2. Science, as applied to Building.—By this is intended a special study of an application of science to definite problems of building.

3. Design including Decoration—such as a study in Civic Monumental, Decorative, or other branch of Architectural Design.

The subject selected for the thesis is to be notified for the approval of the Board four months before the date of the Examination, and the thesis itself is to be submitted four weeks before the same date. The thesis, which may be either an illustrated essay or a design with a detailed report, will be assessed by Examiners specially appointed for the purpose, who will also examine the candidate orally in his thesis. It is open to candidates to obtain distinction in the advanced work, such special distinction to appear in the Kalendar—350 marks.

Testimonies of Study—200 marks.

Total marks—1,200.



AN ordinary general meeting of the Architectural Association was held on Monday at No. 18, Tufton-street, Westminster, S.W., Mr. Gerald Horsley, President, in the chair.

Mr. Hall, Hon. Secretary, read the minutes and some nominations, and announced that the annual conversazione will be held on November 23 at 8 p.m.

He also announced that the Athletic Club Dance will be held in the Wharncliffe Rooms on December 8.

Mr. E. N. L. Walker, Stockwell, and Mr. R. C. Horsley, Emsworth, were then elected as members, and Mr. F. C. Eden as a member of the Council.

THE EXCURSION TO THE LOIRE.

Mr. H. H. Hill then read a paper entitled "The A.A. Excursion to the Loire, 1911," which was illustrated by a large number of lantern illustrations.

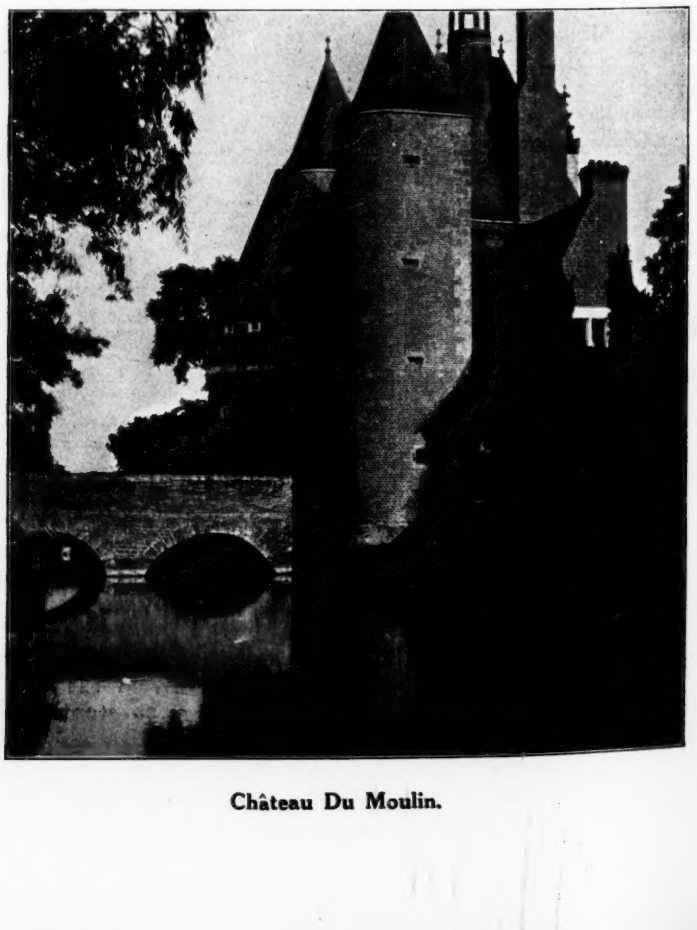
"Mr. President and Gentlemen,—As there are many minds, so are the points of view numerous from which the arts may be studied and enjoyed. And I think in no art are people's ideas of what is or is not to be admired so varied and so capricious as in our own art of architecture. To some a beautiful building only means one very much enriched in its details, exquisitely finished, and lavishly bedecked with carving and ornamentation. Others imagine that they have a great taste for architecture, because they love to visit old buildings, and try to conjure up visions of the personages and happenings that history associates with their walls. In both these classes professional architects are rare. There are some among us, however, who have a curious knack of never regarding a building that is much more than a hundred years old as real, living architecture. Rather they treat it merely as an example, more or less important, of architectural development, an illustration to the history book. And they are far more concerned about the dates of its erection, the state and manner of its restoration, than they are about the æsthetic qualities of its design. But this point of view is now old fashioned, and is only a belated and extreme phase of the great and valuable movement towards the scientific study of architectural history for which the last century is remarkable. For the majority of us nowadays, I am sure I am right in saying that our chief interest in all buildings alike, whether new or old, lies in their actual appearance, whether the result of time and alteration, or of pure design.

Personally, I think it a good thing when one is looking at old work to consider it, for a while, at least, as design only; to study how certain means have brought about certain effects, and the æsthetic value of these effects, detaching altogether, for the moment, the various historical circumstances that also have had their share in determining the form of the architecture. Of course, from this point of view alone one could not make a complete study of any particular building. But we really are not often concerned in the making of such studies. We, as modern designers of buildings, go out to see the work done by our ancestors. We are not so much interested in our ancestors as we are in their architecture.

So this evening, since time did not permit us completely to study any of the buildings that we saw in the Loire Valley last August, nor will it now allow me fully to analyse them, I want to do my best to describe to you the architectural impressions that I then received. These, I fear, being no more than the impressions of a first visit, will have little value as serious criticism. I hope that they will have this merit, at all events, that they will evoke the expression of riper judgments than my own.

The chief aim of the Excursion this year was to visit the Early Renaissance châteaux, the work of the School of Tours, which are so plentifully scattered about the Loire country, from Orléans downwards. But there was also a considerable amount of interesting church work to be seen. Yet it seems to me that in Touraine we were in a kind of ecclesiastical no man's land. To the south of us was the great province of Aquitaine, with its distinctive type of Romanesque church. To the west was Anjou, where the development of vaulting made its own peculiar progress in the XIIth century. And to the north-east lay the Ile de France, where

Gateway, Fontevrault.



Château Du Moulin.

XIIIth-century Gothic shone with its greatest brilliancy.

In Touraine we were not in the rut of any particular type of work. The most important influence seems to have come from the south. And the further we travelled down the river the more we seemed to encounter it, until finally we reached Fontevrault, whose domes are hardly less epoch-making in the history of architecture than those of Perigeux itself.

The Abbey of Fontevrault has had its vicissitudes. In 1804 it was turned into a prison, and at that time the church was sadly mutilated. I think three of the domes were taken down. Now restoration is in progress, and the almost classic magnificence of the nave can again be seen. The east end is differently designed. There are no piers, pendentives, and domes. Closely-spaced columns of unusually long proportions are used, and their rising lines, crowned by small arches, have a very vigorous effect. I am sorry that I have no views of this remarkable church; for within the prison photography was absolutely forbidden. Our only view was the outside of the gateway, an interesting piece of work of the XVIIIth century.

The next most important church of the domical type, but a variant of it that is unique, was that within the castle precincts at Loches. Begun in the Xth century, the first bay at the west end of the nave is all that remains of the earliest portion. This is barrel-vaulted, and carries a tower and spire added in the XIIth century. The next two bays carry extremely curious pyramids, octagonal on plan. The internal effect of these is most weird and mysterious. Viollet-le-Duc was enraptured with the romanticism of the whole church. We saw it under the best of conditions, when the brilliant August sun sent the light right up to the apices of the domes. But in dark weather I should think that the building must appear to be vaulted in inscrutable darkness, gloomy and terrifying to an extreme degree.

At Blois the most interesting church is that of St. Nicholas, of which the nave is early Gothic and the choir XIIth century. Here the influence of Aquitaine and its domes is very slight. There is an attempt at one over the crossing, but evidently the plan was changed, and eight ribs, carrying a vault, spring from the rim of the pendentives, upon which also stands a blind arcade, as though there had been an idea when changing the plan of converting the dome into a lantern. The capitals of the choir are also interesting, and are full of classic feeling.

Of quite another type is the church at Candes. This dates from the end of the XIIth to the XIVth century, and is one of the "hall" type, with the aisles rising to the same height as the nave. The exterior did not strike me as possessing much interest, except for the porch, but the interior is extremely fine, and full of dignity. The piers are clustered, rise to a considerable height, and are very well proportioned. The lighting is principally from long lancet lights in the aisle walls, treated in quite a simple manner, but greatly assisting the sense of height in the building.

Among other churches seen on the Excursion was a fine Romanesque tower and apse at Langeais, the latter built in the IXth century. The spire was added in the XVth century, and the remainder of the church, which is absurdly ugly, within the last half century. In the parish church at Fontevrault, Angevin influence in the vaulting is strongly marked. There is also a square east end, yet vaulted as though an apse had been intended. Blois Cathedral is a XVIIth-century attempt at Gothic, and naturally is rather dull, except for the tower, where the architect returned to his own Renaissance. Tours Cathedral I will not attempt to describe. I barely saw it, and I would very much like to see it again, for there can be no doubt about the magnificence of the west front.

To turn now to the châteaux that we visited—to what, I take it, was the real objective of the Excursion—we find that in this class of building there was much more architectural unity than in the churches. One could see also in them the continuous development of the habits and conditions of life through several centuries, and along with it the evolution of the architectural sense. In the beginning the fortress château, built for defence, often rose to the dignity of architecture, because if not "proportioned unto the rules," it was, at all events, "solid, masculine, and unaffected."

Sincerity in Design.

At a later period, when defence ceased to be the first consideration, and architectural magnificence was eagerly sought, the elusive fairy sometimes all but escaped, leaving in her room but a heap of carvers' pranks. Here certainly architecture was "unaffected," and in good work there was evidence of an endeavour to understand the "rules," though it did not always look "solid," and often was anything but "masculine." Finally, with the rise of the modern architect, trained in both construction and æsthetics, the four requisites of Inigo Jones could be well fulfilled, as, indeed, we saw them, in François Mansart's fine wing at Blois. Henceforth the most frequently broken condition in the quartette was, and is, that architecture should be "unaffected."

In the original mediæval castle at Loches, now a ruin, though in its day one of the most important fortresses in France, at all events, there was no affectation. Nothing could be plainer than the walls of the donjon, relieved only by semicircular buttresses. Nothing more than solid building was aimed at, and nothing more attained. The interior became a prison, I suppose, when the present château was built, and in it the art of torturing appears to have been brought to an unusually high state of perfection. What is now known as the château was built at the other end of the site, by the Kings Charles VIII. and Louis XII., that is to say, between the years 1422 and 1515. Picturesquely situated well above the town, the verticality of its fenestration is telling; though from the level of the terrace, as the view on the screen shows, the unusually heavy string-course becomes almost the most important line in the composition. There was nothing of exceptional interest in the interior, which is no longer inhabited, except the tomb of Agnes Sorel, removed from the church, for some reason, by order of Louis XVIth.

Rising out of the town in the same way as the château of Loches, but with the added advantage of being on the bank of the Loire, is the royal château of Amboise. Here what one sees to-day is but a fraction of what formerly existed; for Napoleon I., in an evil hour, granted it to one Roger Ducos, who, in order to save himself the trouble and expense of repairs, destroyed a large portion of the buildings. What remains is perhaps of more interest on account of its fine situation, and its exciting and lurid history at the time of the Reformation, than as a masterpiece of architecture. In a novel that I read recently, an admiring lady described it as looking as though it were carved out of ivory. But such damning praise is totally undeserved. Probably that very spiky row of dormers, which really detracts from the fine proportions of the lower parts of the building, was what evoked the lady's admiration. The tower is interesting. Inside it is a sloping way, up which horses and light vehicles can be brought. It is top-lighted, and the piers around the light well in the centre assist in carrying the inclined vault. The chapel stands isolated from the other buildings, and is an excellent example of what was good in late Gothic. The remains of Leonardo da Vinci lie buried here.

Military Engineering and Architecture.

At Chaumont the château is again situated standing high up over the Loire. But it does not rise up out of the town like the other two. From the river it appears part castle, part country house, standing among trees, well above the straggling village by the waterside. At close quarters, however, it becomes much more like the work of the military engineer than of the architect, in our sense of the term. The exterior originally must have been strongly defended. Even now the inserted windows are comparatively few. The entrance to the courtyard is between the towers at the south-east angle, and whether deliberately designed for its effect or not, it is a fine piece of architecture. The coats of arms on either side of the drawbridge, an unusual position, would have been better omitted; but for them, I suppose, the client was to blame. The slots over the entrance to take the arms of the drawbridge are effective features, and we saw a number of them in various places. Originally the building entirely surrounded the courtyard; but in the XVIIIth century the north side was taken down, in order, I suppose, to open up the fine view across the river. The increased light and air is probably an advantage to the comfort of the house, which is still inhabited; but the general design naturally suffers from being thus dissevered.

Langeais is another mediæval castle, grim looking enough from the outside, though restored and inhabited at the present day. The original donjon was built in the Xth century: but practically the whole of the building now to be seen dates from the XVth. In the Middle Ages this château was of great importance, but from the XVIth century onwards it seems to have passed fairly quiet days. I suppose it was too mediæval to tempt anybody to covet it and fight for it, and too solidly built to suffer much from decay and mutilation. About the year 1840 it was restored, and again about thirty years ago. The work has been most carefully done, and the late owner has gathered together within its walls a most interesting collection of furniture, tapestries, and other domestic accoutrements, mostly work of the XVth century. Indeed, both here and at Chaumont, the frowning mediæval architecture gains greatly by being continuously inhabited and furnished, if not with the original, at all events with the kind of furniture that it must once have contained. There are also some very good chimneypieces in Langeais, by the way.

Not far from here, and also at the north side of the river, is the little town of Luynes, the chief glories of whose château are its picturesqueness and its magnificent situation. Perched at the end of a range of hills, it has a fine view over the Loire, and looks very imposing when seen from it. But at closer quarters it is neither so big nor so powerful-looking as its neighbour. The buildings are partly XVth century, and partly early XVIIth, the latter marking the transition from the exuberance of the Renaissance to the Classic school of Louis XIVth's reign. The smallness of scale still remains; but a much greater quietness and sobriety of treatment has arrived.

Brickwork is not common in our part of the Loire country, and the only example that we saw of a brick château was Du Moulin. Built in the latter half of the XVth century, this château remained certainly until the middle of the XIXth in the possession of the descendants of the original builder. But since then, I fancy, it must have fallen upon evil days. Victor Petit in 1861 describes it as being carefully furnished in the style of the time of its building. But an edition of the Guide Joanne which I have, published twenty years ago, only mentions the château casually, remarking that a portion is still standing. Its luck, however, has again turned. The house was restored about six or seven years ago, is inhabited again, and beautifully furnished with contemporary furniture.

The general plan consists of a square platform surrounded by a moat. The whole of the east side is occupied by the gatehouse and adjoining buildings. In the centre of the north stands the house itself. Its plan is simple. There are two rooms on each floor. A projection to the south contains the entrance and staircase, one to the north the offices, pantry and basement stairs on the ground floor, and bathrooms above. A picturesque chapel juts out at the north-east corner. The kitchen is in the basement, which is not sunk low enough to be below the water level of the moat.

The whole group is very quiet and very charming. It is historically a step in advance of the other châteaux that I have mentioned, for it is no longer the castle of a feudal lord, but the house of a gentleman, fortified, as the times still demanded. One envies the architect who had so interesting a building to restore, and his skill in restoring it. I notice he has kept faithfully to the view in Petit's book. One addition only has caught my attention. The flèche over the gatehouse did not exist in 1860, and as an improvement it is open to question.

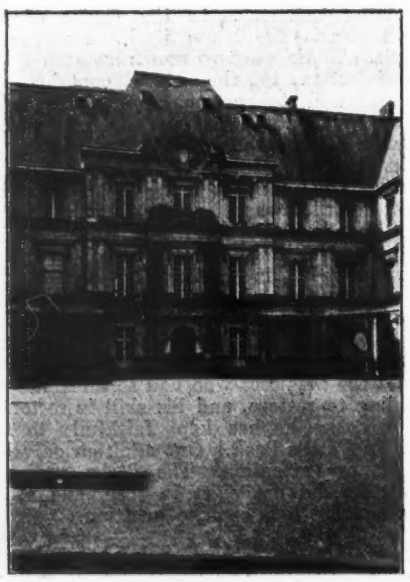
Blois and the Renaissance.

At the château of Blois we reach the Renaissance. The building, indeed, really contains work to suit all tastes—late Gothic,

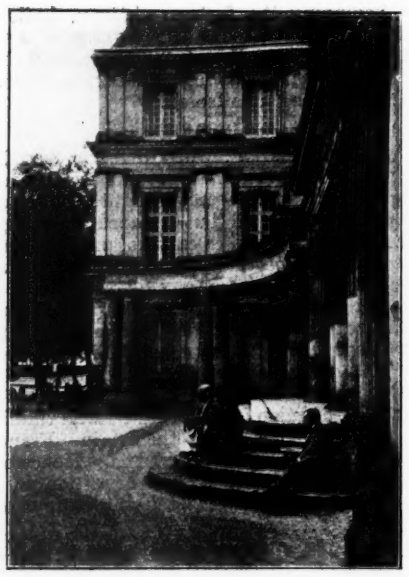
Renaissance, and Early French Classic (for I always think the term Renaissance is hardly suitable to mature and adult architecture, like that of the Louis XIVth wing here). But the chief glory of Blois, in the mind of the ordinary tourist, at all events, is the François I. wing. And certainly it is brave stuff. Curiously enough, it contradicts the accepted proverb that "distance lends enchantment to the view," for the closer one gets, the more one admires the beauty of the detail, and the more one tries to get back and look at it as a whole, the more one is amazed at the happy-go-lucky way in which the design was set out. Philibert de l'Orme was not born a day too soon. At the time of the Renaissance French masons were past masters of their craft. At Blois, indeed, there was no difficulty that they could not surmount, and the staircase is undoubtedly a very marvel of dexterity and beauty. But beautiful features do not necessarily make beautiful architecture. And what was lacking in the early days of François I.'s reign was the mind of the architect to conceive and to control. The Renaissance meant the rebirth of architecture as intellectual design, and although the old combinations of craftsmen tried hard to master its forms, they only attained to picturesqueness of detail, and never reached with them the nobility that they had attained with their own Gothic. To put what I think of this part of the château into present-day office slang, I should say that it had been very cleverly "half-inched," but on a series of small pieces of paper, and that the eighth-scale elevations had never received any consideration. As a result the building is altogether without rhythm. The vertical divisions of the side facing outwards are really exasperating. And it seems such a pity that this great accumulation of fine details (for the overloaded cornice on the courtyard side is the only one that is objectionable) were not combined and unified by some synthetic mind.

The earlier entrance front is a happier piece of work. Here there is no pretence at regular fenestration. Stone shafts make vertical divisions, and windows occur anywhere in the panels between. The effect is quiet, and the only blot on the design as a whole is the doorway, a feature pushed in anyhow, instead of one developed out of the general scheme, and one again showing the need for the modern architect, that was growing even when the Renaissance had hardly begun. The figure on horseback is of Louis XII., and is modern. I cannot help thinking, by the way, from the niche in which he stands, that the doorway was designed by one whose true vocation lay in making tombs and monuments in churches.

This whole front was greatly restored during the latter half of the last century, as, indeed, was the whole château. After the Revolution it was turned into a barrack, mutilated and ill-used, until, in the early forties, after a tussel between the Minister of the Interior and the Minister for War, it was rescued to be preserved as a *monument historique*. The only part now remaining



The Château, Blois.



The Château, Blois.

unrestored is the interior of the latest building designed by François Mansart for Gaston d'Orléans about the year 1637, a building that was accounted a sin by all true romanticists of the XIXth century. Most people nowadays, however, will think less hardly of it. Yet, though well placed in the courtyard, it does not show to the best advantage in its surroundings; for mixed styles in architecture never get on together, any more than would a Turner, a Raphael, and a Sorolla in close proximity in a picture gallery. The ceiling of the vestibule and staircase is the only part of this wing shown to visitors, and it is indeed worth coming to see.

After being somewhat irritated at Blois by the way in which the François I. part, through carelessness of design, just misses the point of being really fine, the visit to Villesavin on the following afternoon was indeed a blessing. Here was a real French gentleman's house, a house that no one could live in without feeling the influence of its ordered refinement. The disposition is eminently architectural, not absolutely symmetrical; for instance, the two end pavilions vary a little both in dimensions and detail, and the blank wall of an orangery comes opposite the west wing shown on the screen; but the balance is perfect. The house seems to have been fortunate in having been built all at one time, and without serious alteration since. I should think that there must have been stone mullions and transomes in the windows originally, but I don't feel their loss much to be regretted. To my mind, French mullioned and transomed windows are often rather heavy looking, and by no means so elegant in their proportions as are the usual English variety. Villesavin was built by Nicholas le Breton, Sieur de Villandry, and Financial Secretary to Francis I. The Le Bretons were a family of masons; and this one managed somehow to improve his own house with materials from Chambord, at the same time in course of erection. Two of the dormer windows on the right-hand side of the courtyard were intended for this great palace, and for some reason not used there. Also the beautiful Italian fountain, being thought not good enough for a royal residence, found its way here. And possibly the exquisitely-refined doorway in the orangery wall may have been another little picking. Whether Francis ever got credit for these when the Chambord accounts were being settled, I have no idea; but the fact that De l'Orme, when appointed Surveyor General to the Royal Buildings, dropped severely upon another member of the Le Breton family, making him refund 18,000 livres overpayment for work at Fontainebleau, is significant.

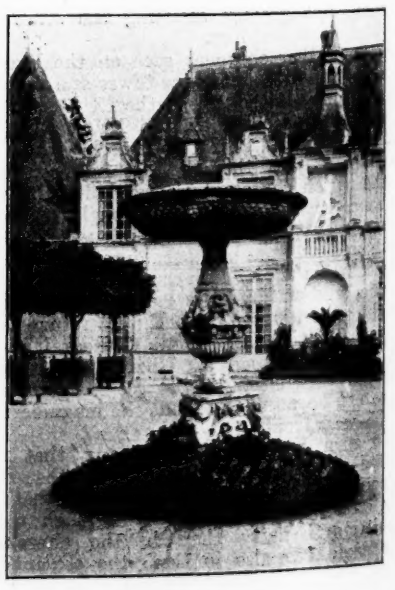
Restoration at Villandry.

At Villandry we spent a most exhilarating morning. The château, standing on the site of a mediæval predecessor, of which only one tower remains, was built in the second half of the XVIth century, altered in the XVIIIth and again, for the worse, in the XIXth (I presume about the thirties) by some English people. It is now in the throes of more alterations, but this time undertaken in a spirit of architectural zeal, with much taste and judgment, though some of us may think without quite sufficient leaven of discretion. M. Carvallo, the present owner, who described himself as owner, architect, builder, and workman, very kindly devoted a morning to our entertainment. He took us all round his garden, and showed us what the English *bestiaux* had done. There had originally been a very large formal garden; but when the English family arrived, believing themselves no doubt to be people of great taste, followers of the romantic revival, and devotees of landscape gardening, they levelled all the terraces, did away with the stiff, formal gardens, and planted grass and trees everywhere and anywhere. M. Carvallo is bent upon restoring all this. He is at work excavating, and has already found the lines and sometimes the walls of the principal terraces and walks. The garden immediately in front of the house he has already laid out, and very well he has done it, too. But in his scorn of grass as an herb for garden effects I don't think many of us will share. Grass can be kept green and level all the year round—in our countries, at least, if not in his—and therefore is surely as suitable as anything else in a garden colour scheme.

In the house, too, he is making sweeping alterations. He is restoring it as nearly as possible to what it originally was. Certainly it had been spoilt, as the photographs before and after will show. Many of the added windows were only shams, he assured us. The tower certainly looks better solid than it did when pierced with windows, except that, of course, the newly-built-up portions look very patchy at present. But it is a better foil to the rich Renaissance work. The removal of the terrace and bridge at the side of the house, too, as done no harm.

M. Carvallo is nothing if not an enthusiast. Architecture, he freely confesses, has altered his whole outlook upon life. He was a scientist, and Villandry has brought him, in addition, culture, civilisation. It has humanised him. He even went the length of telling us that we, as architects and artists, struck him at once as better-looking, and more intelligent-looking, than the ordinary men of commerce and affairs!

From Villandry we drove to Azay-le-Rideau, to the château that, if I may make bold to choose, was the gem of the Excursion. The river front is altogether delightful. There is a kind of music in it, obtained, I know not how, except by a happy combination of excellent qualities. Good proportions there are, fine scale, and symmetry, though this last is by no means the mathematical sort, for there are many little irregularities which the eye does not at first detect. But the quality which above all others distinguishes it, and makes it so much finer than the work of the same period at Blois, for instance, is its marvellous rhythm. With the bright sun upon it, the whole elevation dazzles one in



Italian Fountain, Villesavin.

its shimmering whiteness. It seems hardly real.

At the other side, too, the approach is equally charming. A long, straight, avenue on the axis of the entrance doors leads one first past a pair of excellent gate piers of XVIIth or XVIIIth century design, upon either side of which, facing the château, are picturesque stable buildings, erected about the same period. These piers serve a very useful purpose. They block out the view of nearly the whole of the château, allowing one to see only a vista of the entrance feature. For feature it is, and a good one by itself. But I think it must have been a thorn in the side of the architect of the building. I should fancy the history of it must have been something like this:—Gilles Berthelot, the owner of the house, and sometime Treasurer-General to King Francis I., probably wanted to be in the latest fashion. He wanted to have in the middle of his house a fine feature, containing the entrance and staircase, all done in the new Italian style. Accordingly he did just what many another foolish client would do to-day. He dispensed with his architect's services for this portion of the building, and introduced the sculptor from Italy over his head. The sculptor really did well, on the whole, though there is a good deal of petty nonsense in his detail. But where he failed was where a great many other people used to fail at the same period—he did not realise that what he had designed was in no way a part of the building to which it belonged. It is just as if one design were inserted in a part cut haphazard out of another.

I have left mention of the Château of Chenonceaux to the last for this reason. It contains the latest development of architecture that we saw, with the exception of Mansart's wing at Blois. But whereas at Blois the characteristic part—the part that one always, though, may be involuntarily, associates with the name—is the wing containing the staircase, at Chenonceaux the bridge gallery is the picture that flashes to one's mind with the word. This, together with the stables here also, is the work of Philibert de l'Orme.

De l'Orme, having studied his art in Rome, was practically the first French architect to understand what classic architecture really meant. Not only did he see that it was more than an affair of decorative details, such as had marked the Renaissance up to this, but that a building should be a single work of art, the intellectual output of a single individual. The system of producing architecture by collective craftsmanship died with the old Gothic. De l'Orme hated the old order of things; and he probably saw enough of the bad work resulting from a combination of French masons of the old school, with Italian carvers and painters of the new, each out of sympathy with, and failing even to understand, the aims of the others.

In the bridge of Chenonceaux the feeling is different from any of the contemporary work in the neighbourhood. The building is not better than some of the others that we saw. I do not think it is as brilliant a piece of work as the river front at Azay-le-Rideau. It contains certain faults of detail, such as the missing out of some of the modillions in the cornice, in order to bring in the tops of the pediments, and the placing of semi-circular headed windows in the rounded bays over the piers of the bridge—this being rather typical of De l'Orme's weakness for constructional feats, for there was a certain difficulty in doing what the surveyor would call "circular-circular" work. But this bridge is a design. I feel that the quality of breadth which it possesses was sought for deliberately and scientifically. Every effect was first considered on the drawing-board. To compare it again with Azay-le-Rideau, the one is a sonata, the other an impromptu.

The remainder of the château, also partly built over the river, makes a good foil to De l'Orme's more serious work. On both sides it groups up in a very picturesque manner; but the stunted proportions of the first floor rather spoil the effect of the entrance front. One's sympathies are all with Diane de Poitiers. To be turned out of so beautiful a home as soon as it was hardly completed by the jealous vengeance of Catherine di Medici was a harsh punishment.

I cannot conclude a description of this year's Excursion without some reference to the towns.

At Blois we spent more time than anywhere else. And a very pleasant little town it is, too. With the château one one hill, and the cathedral on another, the town itself converges to the river bank and a fine bridge across the Loire. Here is a piece of laying-out that will commend itself to town-planning enthusiasts. The axis line of the bridge is continued through a portion of the town, climbs by a flight of steps uphill, past a big flower bed, and terminates in a statue to Denis Papin, a native of the town, and the George Stevenson of France. From here the view looking back is most impressive, for the same line is continued to the horizon in the other direction, in a fine *route nationale*, between forests upon either hand.

In addition to the buildings already described are many others that are worth seeing. There are two interesting XVIIIth-century gateways close to the cathedral. I have a slide of one of them. They lead to the Bishop's Palace, the gardens of which are open to the public, and from where there is a fine view across the river and over the surrounding country.

Tours is a very different town. In the first place it is very much bigger, and then it is

Chenonceaux.

situated on flat ground at the south side of the Loire. Nominally, we stayed here for a longer time than we did at Blois; but we were so occupied with our excursions into the neighbouring country, that really it is hardly correct to say that we visited Tours at all. This was unfortunate, but it was also unavoidable. The town is interesting from many points of view. It contains many old buildings of all periods. But the general impression that one gains is that of a modern city, not much more than 120 years old, well laid out, and the majority of its buildings belonging to the latter half of the last century. The town glories in a new Hôtel de Ville, a building which suffers from too much sculpture, and a general want of restraint. I prefer the older Greek revival, Palais de Justice, which balances it, and is more in keeping with the general quiet air of the architecture of the place. The building of which, naturally, we saw most was the railway-station, a very fine piece of work, and, unlike almost any station that one can think of in England, a pleasure to the eyes.

When we went to Loches we visited a typically mediæval city, clinging round the base of the feudal castle. Here there is no town planning. The streets are narrow and winding. They have that mediæval trick of never seeming to go straight for anything. The Early Renaissance Hôtel de Ville is unceremoniously poked into a corner, and built up against one of the gateways of the old town. The Tour St. Antoine, all that remains of an old church, is a landmark; but, like so many other Early Renaissance towers, is not a success. Early Renaissance forms are too small and too refined to be of value in tower design, where bigness of scale and boldness of outline are the chief requirements. If that tower had been built in the old Gothic days, the walls would have been battered, and something would have been made of the buttresses.

Saumur looks a fine town as one approaches it. Our first view took in a strictly orthodox classic theatre, just over the bridge, an imposing building, though rather dull. The Hôtel de Ville, a little farther up the town, has much more life in it. Partly Gothic and partly Renaissance, I think the earlier work, with its plain wall space and quaint roof, was the more interesting.

Mr. President and gentlemen, when I began my paper, I mentioned first the Abbey of Fontevrault, visited on the last day of the Excursion. In speaking of the town of Saumur I have now got round to the last day again. I fear that in recording my impressions I have taken up a great deal of your time. I regret, too, that I was not better qualified to perform the task; for as I am, as you will probably by now have discovered, quite without any special knowledge of the history of French architecture. When I try to find the reasons why I should have written this paper at all I can find none, save this—that the President asked me, and I felt so flattered that I could not refuse!"

The President,

in inviting discussion, said that, in the last words of his interesting paper Mr. Hill had told them how he came to address them upon the subject. It was a privilege belonging to the President for the time being to ask one of the members present at the Annual Excursion to read a paper on the Excursion to the Association, and he thought they would agree that in asking Mr. Hill to undertake this work he was very fortunate in his choice. It seemed to him that Mr. Hill was altogether too modest when he disclaimed any special knowledge of the history of French architecture. His paper, on the contrary, which was extremely sympathetic and a just and critical account of much that was seen on the recent delightful Excursion, proved, at any rate, that he had a wide knowledge of the subject and a true and deep insight into the enthusiasms and those irresistible motives which impelled forward the development of French architecture. Certainly, the Association was fortunate in its choice of the *locale* of the Excursion; rich, as they had heard, in works of the greatest architectural interest, it was also rich in the beauties of Nature. They did not see the River Loire in a moment of her special power and magnificence, but they saw her in summer mood and dress, supremely beautiful under the bluest and clearest of skies. Mr. Hill had rightly lamented in his paper the fact that they could not give more time to seeing the city of Tours. There was a large amount of fine old painted glass in the Cathedral, and the bays of the choir and of the nave were fine examples of that splendid treatment in bay design of large clearstory windows the full width of the bays. There was also a remarkable XVIIth-century organ front in the transept. Tours also was famous for some good town planning, especially where the principal bridge crossed the river. The churches were extraordinarily interesting; particularly the Abbey of Fontevrault and Candes. The plans and sections of the former should be familiar to all. Mr. Hill had referred to the fact that some of the châteaux they saw were rich in their possessions in old furniture, and instanced Chaumont and Langeais. This was notably the case, and, besides furniture, the wealth of fine tapestries of different dates was quite remarkable. The painted ornament also in the wooden ceilings formed part of interesting schemes of decoration in the rooms, and in connexion with this one remembered the fine tiled floors. He was glad Mr. Hill spoke of the chimneypieces at Langeais. They all agreed that the two they saw there were among the best they had seen during the tour.

Mr. J. Johnson,

who proposed a hearty vote of thanks to Mr. Hill, said the detail of the work the party saw was most charming; the arabesques on

the pilasters were of the greatest possible refinement and delicacy, and there was a most delightful Italian feeling in the work. There was no doubt that many of the châteaux were, in part, very much alike, but they varied in so many details of turrets, dormers, and chimneys that they were exceedingly picturesque; and after having a surfeit in this country of the Georgian box of bricks period, old and new, with poor cornices and heavy swaggering enrichments, it was interesting to go over and see how the French had treated their residences.

Mr. H. D. Searles-Wood.

in seconding the vote of thanks, said he was not one of the party this year, but he had followed the paper with great interest. Professor Blomfield, in his paper at the R.I.B.A. last December, made the remark that François I. was his own architect to a large extent, and he did not want the professional architect under him; and that might account for some of the little irregularities in design which Mr. Hill had referred to. Mr. Noel Williams' "Henri II." gives an interesting account of the history of the period during which most of the châteaux on the Loire were built. He might mention that at Tours there was a very interesting Cours de Vacances in French for English people in connexion wih the University, and he had brought a little pamphlet about it, because he thought that some of their students might take the course. It was carried on during the month of August, the courses in the University for French being in the morning, thus affording the opportunity for visiting places of interest in the afternoon.

Mr. Louis Ambler

said he should have liked to have taken part in the Excursion in order to renew his acquaintance, made twenty-five years ago, with these delightful châteaux and churches. The only two he had not seen of those described by Mr. Hill were Du Moulin and Villandry. The month he spent in the district was taken up in sketching, and he wondered how the excursionists were able to see as much as they did in a week; he did not see much more in a month. Mr. Hill did not say much about Chambord. [Mr. Hill: I did not go there.] It was very picturesque and imposing at a distance, and vast, but a little disappointing when one got close to it. What one expected to find was black marble inlay was found to be only slate stuck on; it was effective, but poor as a material used in that way, and the detail was rather coarse compared with the other châteaux. When in the district he was able to sketch inside Chaumont, but that did not seem to be permitted now; he measured up an interesting fireplace there, in the Astrologer's Room, as it was called. Azay-le-Rideau and Chenonceaux also contained much old furniture. Blois showed the evolution from Gothic to Renaissance. In those days the wing at Blois by Mansart was considered inferior, but views had changed, and now that work was looked upon as superior to the rest.

Mr. Andrew Oliver

said that one important point to take into consideration was that the châteaux they had seen exemplified clearly the gradual transition from the fort and the fortified house pure and simple to the château or dwelling. At Losches we had a fortress; at Langeais there were battlements and machicolations, and these machicolations, although they were used first of all as defence, at Azay-le-Rideau, the defence idea had gone, and they were used simply as ornament. At Chenonceaux Cathedral they found a château, but in an old portion of the building machicolations. What was very unusual in that part of France was a fortified church tower, to be seen at Candes, that was almost a counterpart of the western front of Beziers Cathedral, as the machicolations and circular windows are similar in both cases.

Mr. A. T. Bolton

said that in 1893 he was in the district, going through and further south to Spain. He did not think that anyone going through the Valley of the Loire could fail to be impressed with the architecture, though the drawback was that the facilities for sketching were not great. About 15 miles farther south there was the château of La Rochefoucauld, which was deserted except for the caretaker; and there it was possible to measure and sketch, but the work was not so fine in detail as that further north. He thought Mr. Hill had been rather hard on François Premier work. After some interesting remarks on the period from 1520-1600 to show the relations between Italy, France, and England, Mr. Bolton said that they could not consider these châteaux as entirely dissociated from the history of the times. How did the châteaux come to be built? Well, François I. was a man who was always building, taking an interest in building châteaux as any other potentate might have taken in building ships, and large sums of money were expended in this way, for no sooner was one building finished than another was started; but Francis never troubled to repair the buildings when they required it. Some of these châteaux were gifts to ladies of the Court, and if one wanted to know about the relations between the King and the artists of the time they would find it most interestingly given in Benvenuto Cellini's own account of his relations with François I. The picturesqueness of the epoch seemed to be reflected in these beautiful châteaux, and it lent very great interest to them. Other smaller buildings of the period besides the châteaux were of very great interest, and the whole district was very well worth going to and staying in as long as one could.

Mr. E. Gunn

said that Mr. Hill's similes had been admirable, but he had hardly made it clear that what was left at Amboise was but a mere fragment of the original.

Mr. Yates

said the arrangements for the Excursion were well carried out, and great thanks were due to Mr. Hennings and Mr. Talbot Brown for the arrangements they made.

Mr. G. H. Jenkins

said this was the first excursion he had ever been to, and he hoped to continue going. He believed that if a man went once he was likely to continue going, for he would find out what a splendid thing the A.A. Excursion is. The party this year saw a lot of interesting work in connexion with gardens and laying out.

The President put the vote of thanks to the meeting, and it was carried heartily.

Mr. Hill,

in reply, said that in passing the vote of thanks to him he thought they ought to include Mr. Greig and Mr. Farrow for photographs and slides which had been shown on the screen. He was sorry to be accused of being severe on the architecture of the François Premier, though perhaps he was wrong to use the words "carelessness of design." But perhaps, owing to the circumstances of design—to François being his own architect, and to the fact of the buildings growing bit by bit and as needs would require—they did not grow quite as they were intended. That was certainly the case with Blois. The enthusiasm of the age, he fancied, sometimes outran the scholarship of the race of architects that was growing up. As to the observation that he was not very clear about Amboise, he was afraid he did not know how great was the extent of the château before part of it was destroyed. The French Philistines, no doubt, were far worse than the English ones; they destroyed ruthlessly; in fact, a great many of the châteaux were entirely destroyed in the XVIIIth century, because people did not want the trouble of keeping them up.

The President announced that the next meeting will be held on November 13 (combined meeting with the Camera, Sketch, and Debate Club), when a paper by Mr. J. B. Fulton, A.R.I.B.A., entitled "That the True Hope of Architecture Lies in the Study of Good Modern Work," will be read.

The meeting then terminated.

[For the photograph of Du Moulin (p. 500) we are indebted to Mr. Baxter Greig, A.R.I.B.A., and for the others reproduced in this report to Mr. A. W. Hennings, A.R.I.B.A.]

ARCHITECTURAL SOCIETIES.

The Glasgow Technical College Architectural Craftsmen's Society.

At a meeting of this Society held in the Society's Room, in the Technical College, Mr. James S. Boyd, President, in the chair, Professor Charles Gourlay, B.Sc., A.R.I.B.A., delivered a lecture entitled "The College Diploma and Certificate Courses in Building." In his introductory remarks the lecturer pointed out that it lies more with the student himself whether or not he succeeds in obtaining a thorough knowledge of his subject than with his teachers or the general course which has been planned out for him. The student requires to exercise such qualities as earnestness and thoroughness, also the faculty of taking pains to understand and learn what he is taught. From the practical point of view the most important quality to be cultivated by a student of building is the habit of accurate observation. Assuming a student to possess these qualities, then the greatest profit, in so far as attendance at classes is concerned, will accrue to him if he takes those classes in the order which experience has proved to be most beneficial. The fundamental idea underlying all courses of instruction is the desire on the part of the educational authorities that the student should receive a good foundation and a thorough equipment for his work in life. They wish him to leave college strong in his subject and able to pursue his labours with as great certainty of being right in them as is possible. The lecturer then detailed the day and evening courses in building, dealing with the Entrance Examinations, the Continuation Schools, and the place they fill in the courses of study which lead ultimately to the Junior and Senior Certificates and to the Diploma of the Technical College, which is the highest point at present attainable by the student of building. In conclusion, the lecturer said that the education of the building student was a serious matter, and much of that genuine happiness to be found in one's work in life depended on the sense in which he pursues his studies, which, when completed, should greatly add to his skill and to the pleasure in exercising it which practical work affords him.

Wolverhampton and District Architectural Association.

At the general meeting of the Wolverhampton and District Architectural Association, held at the Library, Waterloo-road, the following officers for the year 1912 were appointed:—Mr. T. H. Fleming, President; Mr. W. J. Oliver, Vice-President; Mr. A. W. Worrall, Hon. Treasurer; Mr. W. Weller, Hon. Secretary (15, King-street); Messrs. F. T. Beck, W. Edwards, and A. Eaton Painter, members of the Council.

ENGINEERING SOCIETIES.

Institution of Civil Engineers.

The Council of the Institution of Civil Engineers have made the following awards in respect of papers published in sect. II. of the *Proceedings* for the session 1910-11:—Telford Premiums to Messrs. S. M. Dixon, M.A., B.A.I. (Birmingham); H. J. F. Gourley, B.Eng. (London); J. Holden (London); A. Rogers (Horsell); A. E. Griffin (Hong-Kong); F. C. Lea, D.Sc. (Birmingham); and a Crampton Prize to Professor W. E. Dalby, M.A., B.Sc. (London). They have also awarded the Indian Premium for 1911 to C. E. Capito (Ahwaz, Persia), and the Webb Prize to F. W. Bach (London).

Institution of Municipal Engineers: Annual Meeting, Windsor.

The third annual meeting of the Institution of Municipal Engineers took place recently in the Guildhall, Windsor.

Mr. B. Wyand, Secretary, read the minutes of the last meeting and the annual report.

The President-Elect, Mr. E. A. Stickland, A.M.Inst.C.E.,

Borough Surveyor of Windsor, proposed the adoption of the report and balance-sheet. Considering this was only their third annual meeting, their position was a remarkable one, not the least satisfactory feature being their excess of income over expenditure—after

too, they had to write off a certain amount as irrecoverable.

Mr. Horace Boot seconded the proposition.

The President, Mr. A. E. Prescott, put the motion for the adoption of the report, and it was carried unanimously.

Mr. Stickland

then assumed the chair from which Mr. Prescott retired and delivered his Presidential Address. In the course of his remarks he said that Windsor, as far as the town is concerned, has little or no history. "Windleshore," as the ancient town was called by the Saxons, was granted to the monks of Westminster by Edward the Confessor. William the Conqueror decided to build a Royal residence there, thus originating that structure which is now so well known all over the world. The history of our native land is closely intertwined with that of Windsor Castle.

"Windsor, like every other town, has felt the advent of the motor-car and the consequent outcry caused by the dust nuisance, etc. The main roads through the borough are being gradually but surely converted from ordinary water-bound granite roads to tarred slag-macadam roads.

During the present year a number of roads have been tar-painted, and, favoured by a very good quality of tar and suitable weather, that work has proved very successful. The cost works out just under 1d. per square yard. . . .

With regard to the examinations shortly to be held under the authority of this Institution, we all know that an entirely new line of idea has been formulated by the Committee, after a great deal of careful consideration and discussion. A scheme has been prepared the success or failure of which will be jealously watched and severely criticised by those of the old school. . . . . The subject of road construction and maintenance, although centuries old, is ever new. At the present time the question bristles with difficulties of an almost unsurmountable character, and the perfect road is not yet within the grasp of the surveyors and road-makers of to-day. The trials now taking place at Sidcup are being watched with an intentness that proves we are all waiting and hoping to gain an experience which will be of benefit both to the road-user and the road-mender of the future.

The crux of the whole matter, however, is money, and while the wealthy districts are able and willing to spend large sums of money annually upon the reconstruction and upkeep of their roads, the poorer districts, by reason of their inability to obtain the necessary funds to mend their ways, must perforce let things remain almost as they were. The dust nuisance is each year being more extensively combated, and when we constantly read of the number of miles of roads in the different counties which are being tarred it goes to prove that both councils and their officials recognise the necessity of some means of dust prevention, not forgetting at the same time that the hearts of gas shareholders must be almost bursting with satisfaction that the value of their shares are increasing.

You may have—in fact, you must have—read in almost numberless cases the statement that the construction and maintenance of roads and highways in this, that, and the other town and district costs so much to maintain. I contend these figures are most misleading to the ordinary mind, and I will try to explain what I mean. First of all, the nearness or remoteness of a district from the site where road metal is quarried or prepared may mean that railway carriage costs more per ton of material than the material itself. Take my own town, for instance. For some years past I have been using Enderby granite from Narborough, Leicester. The granite at the quarry is quoted me at 5s. 7d. per ton, the railway carriage is 7s. 2d. per ton. Now can I possibly construct a road at anything like the same price as the surveyor in a district or town within ten or twenty miles of the quarry? Again, labour in some places is much less than in others. Then, in the case of a water-bound road, if the water has to be carted any distance another unit of difference occurs.

I am of opinion that in cases where costs of road construction are given we should know the price of the material on the actual work, and this can be easily given, for we all know what we pay for road material, and we also know the cost of cartage. . . .

Another subject which at the present time is attracting a great deal of attention and much discussion is the Town Planning Act; but here, again, as in the matter of road improvements, the question of £ s. d. is so intimately bound up with the carrying out of the Act, one almost fears it is only in wealthy districts that the elaborate and necessary expenditure required for the working thereof can be considered and adopted. It is too much to expect that an institution similar to the Road Board will ever be constituted to assist local authorities in the matter of town planning, for, after all, had it not been for the advent of the motor-car, would the at present enormous expenditure and activity on road construction and maintenance have been pushed to the extent that it has reached? If the gratification of the pleasure of the minority can work such wonder, is it not much more important that the comfort, healthy and sanitary condition of the immense numbers of working men and their families should have some consideration? Are not the surroundings of the habitations of the poorer classes in scores of smaller towns and villages equally as insanitary as those of our larger cities, such as Liverpool, Birmingham, Manchester, etc.? . . .

As municipal surveyors I am confident we shall view with great gratification the carrying into effect of those sections of the Town Planning Act which will enable the home life of the poorer class to be improved, and I hope our efforts in that direction will be as strenuous as they are in the execution of our other duties."

Mr. A. Ernest Prescott (Eastbourne) moved a vote of thanks to the President for his address, and Mr. H. C. H. Shenton (Westminster) seconded.

The proposition was cordially agreed to, and the President replied.

Mr. Horace Boot (Tunbridge Wells) then proposed a hearty vote of thanks to the retiring President, Mr. A. Ernest Prescott.

Mr. Henry C. Adams (Westminster) seconded the vote, which was supported by the President and passed by acclamation.

Mr. Prescott briefly replied.

In the afternoon a visit was paid to Windsor Castle, and the various works of the Corporation, including the police and fire stations, depôt, and refuse destructor, were inspected in turn by the members. In the evening the company reassembled at the Guildhall, where they were entertained to tea by the President.

The following are the newly-elected members of Council:—

President: E. A. Stickland, Windsor.

Vice-Presidents: H. C. Adams, London; H. L. P. Boot, Tunbridge Wells; A. Bowes, Newton-in-Makerfield; W. H. M. Jones, Chester; Frank Latham, Penzance.

Honorary Treasurer: Frank Latham, Penzance.

Ordinary members: J. Bailey, Spalding; C. O. Baines, Paignton; W. Bevan, Haverfordwest; A. R. Bleazard, Clitheroe; J. Bourne, Rawmarsh; W. L. Carr, Ruislip-Northwood; A. H. Carrell, Leicester; R. G. Coates, Norfolk; F. Cutler, Deptford, S.E.; A. J. Elson, Penge; C. H. Eyles, London; H. J. Farmer, Christchurch; A. W. Gray, Lambeth; R. W. Jones, Carmarthen; A. J. Meeson, Brentwood; T. Mundy, Woolwich; H. Paterson, Hebburn-on-Tyne; A. A. Pattison, Newcastle-under-Lyme; D. Roberts, Lewes; J. Robinson, Darlington; H. C. H. Shenton, London; G. Symon, Blaydon-on-Tyne; J. Taylor, Uckfield; E. W. Veale, Farnham; E. Whitwell, Abersychan.

Meeting at Brentwood.

A meeting of the members of the Institution of Municipal Engineers was held at Brentwood, on Saturday, October 28, for the purpose of inspecting the sewage disposal works there, which are now nearing completion. There was a large attendance, about sixty being present, including the President, Mr. E. A. Stickland, of Windsor.

A paper fully describing the scheme was given by Mr. J. Edward Willcox, M.Inst.C.E., of the firm of Messrs. Willcox, Raikes, & Reed, Westminster and Birmingham, the engineers, and the party afterwards inspected the sewage farm and works. The scheme comprises the construction of the main outfall sewer and a complete installation of bacteria beds on the most modern lines for dealing with the sewage of the joint drainage area having a population of 12,000, including detritus and screening chambers, sedimentation tanks, colloidal tanks, high and low level filters, humus tanks, sludge lagoons, together with irrigation area for dealing with the supernatant water and drainage from the sludge lagoons. The members of the Institution were afterwards entertained to tea at the Brentwood Town Hall.

Junior Institution of Engineers.

The Junior Institution of Engineers held a very well-attended meeting on October 30, when a paper on "Notes on Design and Construction in Gas Work" was read by Mr. George Evetts, Assoc.M.Inst.C.E. (member).

The author dealt with considerations which guide the engineer or estimator in choosing the site and laying out the same for all buildings and plant. He dealt in detail with the design of the retort house, coal stores, purifier-house, both as to types of buildings and materials of construction, as well as the main portions of the plant, such as retort settings, purifiers, gas-holders, etc., indicating the practical considerations which the engineer has to keep in mind in designing such works. Details of costs of buildings and portions of plant was a feature of the paper. The meeting terminated with the usual announcements, among which may be noticed that of the Presidential Address of Commendatore G. Marconi, LL.D., D.Sc., on "Engineering Considerations in Wireless Telegraphy," which is to be delivered on November 28, tickets for the meeting being obtainable from the Secretary, 39, Victoria-street, Westminster, London.

GENERAL NEWS.

Professional Announcements.

The partnership heretofore subsisting between Mr. C. R. Field and Mr. William Glasier, under the Style of Field, Sons, & Glasier, surveyors and estate agents, of Borough High-street, S.E., and Waterloo-place, S.W., has been dissolved as from September 29 last. Mr. Field will continue the business under the old style of Field & Sons, and Mr. Glasier will practise as a land agent and surveyor at No. 17, Pall Mall East, S.W., under the name and style of Mr. William Glasier.

Mr. Alfred E. Nightingale is carrying on his profession of architect and surveyor at Albert-embankment and Gray's Inn-chambers, having given up his office at 98, High-street, Putney. The Studios, Drawing, and Tracing Offices have removed to Albert-embankment.

Japanese Art.

Professor Josiah Conder, F.R.I.B.A., Emeritus Professor of the Imperial University, Tokio, has written an illustrated and descriptive catalogue of a collection of paintings, studies, and sketches by Kawanahé Kyōsai, one of the most important modern artists of Japan. He died in 1889, and Professor Conder, who worked for some years in the studio of the artist, has compiled a valuable monograph. The illustrations are remarkable, the frontispiece being a beautiful reproduction in colours printed from no fewer than eighty blocks. With its elaborate notes on Japanese technique the book will be specially interesting to students of Oriental art.

Fitzwilliam Museum, Cambridge.

The most recent additions to the permanent collections embrace Rossetti's "Girl at a Lattice"; drawings and designs by Burne-Jones, Lord Leighton, and Sir E. J. Poynter, P.R.A.; a portrait by Sandys; a water-colour by J. F. Lewis, R.A.; landscape by Daubigny; and "The Bench," by Hogarth. Gifts of twelve of their etchings have been made by Mr. Martin Hardie, A.R.E., and the Hon. Walter H. James, A.R.E., and the King has lent some highly interesting drawings by Italian masters, one of them being Leonardo da Vinci's first sketch for his "Last Supper."

Iffley Church, Oxon.

The Rev. O. S. E. Clarendon, Vicar of Iffley, makes an appeal for contributions to a sum of 400*l.*, being the estimated cost of carrying out the urgently-needed repair of the Norman tower, now greatly injured by decay, of the well-known church of St. Mary. The tower rises from between the nave and the chancel, the latter being mainly of the early English style, with a groined roof of stone, the ribs springing from clustered and simpler columns; the western doorway has chevron mouldings and other embellishments.

Portinscale Bridge.

Sir Robert Hunter writes to the *Times* that, in order to remove any hesitation on the part of the Cumberland County Council to spend money in grouting Portinscale Bridge, Canon Rawnsley and Mrs. Slack, of Derwent Hill (the property nearest to the bridge), have made an offer to the Council to guarantee the cost of grouting the bridge, if the result should (contrary to every expectation) be found unsatisfactory. This generous offer, he says, should make it easy for the Council to accede to the widely-expressed wish that the bridge should be spared.

Rivington Hall, Lancs.

Sir William Lever has presented Rivington Hall, standing in what is now Lever Park, to Bolton, his native city, in order that it may serve as a house of refreshment and as a permanent art exhibition. Sir William Lever has placed in the old XVIIIth-century building a collection of contemporary pictures and furniture. Rivington was the seat of the Pilkington family in the XIVth-XVIth centuries. Eleven years ago Sir William Lever presented to Bolton the Hall i' th' Wood, the home, in 1774-9, of Samuel Crompton, inventor of the spinning-mule, whereof the older and half-timbered portion is reputedly of the late XVth-century period.

Hotel Cecil, Strand.

A conversion is to be effected of the large courtyard into a winter garden of considerable architectural pretensions, to cover an area of about 95 ft. by 45 ft., and to serve as an afternoon and evening lounge, with an orchestra, etc. A smaller courtyard will be made at the entrance from the Strand, and many other structural improvements of the hotel will be made.

Memorial Windows, St. Bede's Church, Liverpool.

Four stained-glass windows have been erected in this church as a memorial to the late Vicar of the parish. The architect for the work was Mr. James Francis Doyle, and the windows were designed by Mr. A. L. Moore. The first window depicts the Venerable Bede dictating part of the Gospel to a scribe. The second shows St. Aidan, Bishop of Lindisfame, preaching to Oswald, King of Northumbria, and some of his subjects. The third shows Caxton at his press, and the fourth shows John Wycliffe sending out his preachers. The windows are in the south aisle.

King Edward VII. Memorial, York Minster.

Mr. G. W. Milburn has sculptured a statue of the late King, which the Dean will give to the Minster. The statue, in Caen stone, is life-sized, and presents the King in his ecclesiastical Coronation robes—stole, dalmatic, and cope—holding a sceptre with orb and cross in one hand and Edward the Confessor's sceptre with orb and dove in the other. It will be placed in a niche on the north side of the high altar.

Memorial to the late Miss Lloyd George.

The memorial which has been erected in Criccieth graveyard to the late Miss Mair Lloyd George includes a bust sculptured in marble by Sir W. Goscombe John, R.A.

Egypt Exploration Fund.

The *Times* is officially informed that the chief work of the Egypt Exploration Fund during the coming season will be the continued excavation of the Osireion at Abydos, a great subterranean building connected with the Temple of Seti. Its excavation was begun in 1902-3 by the Egyptian Research Account, the work being conducted by Miss Margaret Murray and Mrs. Petrie, under the general supervision of Professor Petrie. For various reasons the work was not continued by the Research Account.

Cities and Town Planning Exhibitions.

A meeting of the Executive Committee of the Cities and Town Planning Exhibitions was held at the rooms of the Sociological Society, 21, Buckingham-street, London, W.C., on Wednesday, when a report by the Director on "Exhibitions 1910 and 1911" was received, mentioning the following:—The R.I.B.A. Exhibition; the one held in Crosby Hall, which was opened by the Right Hon. John Burns, M.P.; Edinburgh (1,700 visitors); Dublin (Women's Health Association Exhibition); Belfast (in connexion with the Congress and Exhibition of the Royal Sanitary Institute); Dublin (in connexion with the Congress of the Royal Sanitary Institute of Public Health). It is proposed to hold the following Exhibitions in 1912:—Liverpool, Birmingham, and Glasgow. At the meeting the question of proposed co-operation with the town planners of the U.S.A., Germany, and France was considered.

Association of Teachers in Technical Institutions.

The annual meeting of the Association of Teachers in Technical Institutions will be held at the Borough Polytechnic, Borough-road, S.E., on November 4. The annual report of the Council deals with the large increase in the membership of the Association in the past year, and with active work during that period. Branches have been formed in Ireland and Wales, so that the activities of the Association now spread over the whole kingdom. After the consideration of the report a discussion will be initiated on the Board of Education Examinations in Science, by Mr. C. F. Smith, Manchester School of Technology, and Mr. J. Wilson, Battersea Polytechnic. Particulars can be obtained from the Hon. Secretary, Mr. P. Abbott, the Polytechnic, Regent-street, W.

Institute of Architects of N.S.W.

The fourth Architectural Exhibition under the auspices of the Institute of Architects of N.S.W. will be held at the Royal Art Society's Rooms, 76, Pitt-street, Sydney, from December 2 to 9.

Ghent Exhibition, 1913.

The Belgian Foreign Office have formally invited our Government to take part in the International Exhibition at Ghent, and M. Cooremans, President of the Belgian House of Commons, and M. de Naeyer, President of the Canal Commission, with other representatives, have come to England to negotiate with the Board of Trade. Large sectional spaces in the Exhibition have already been allotted to Germany and France.

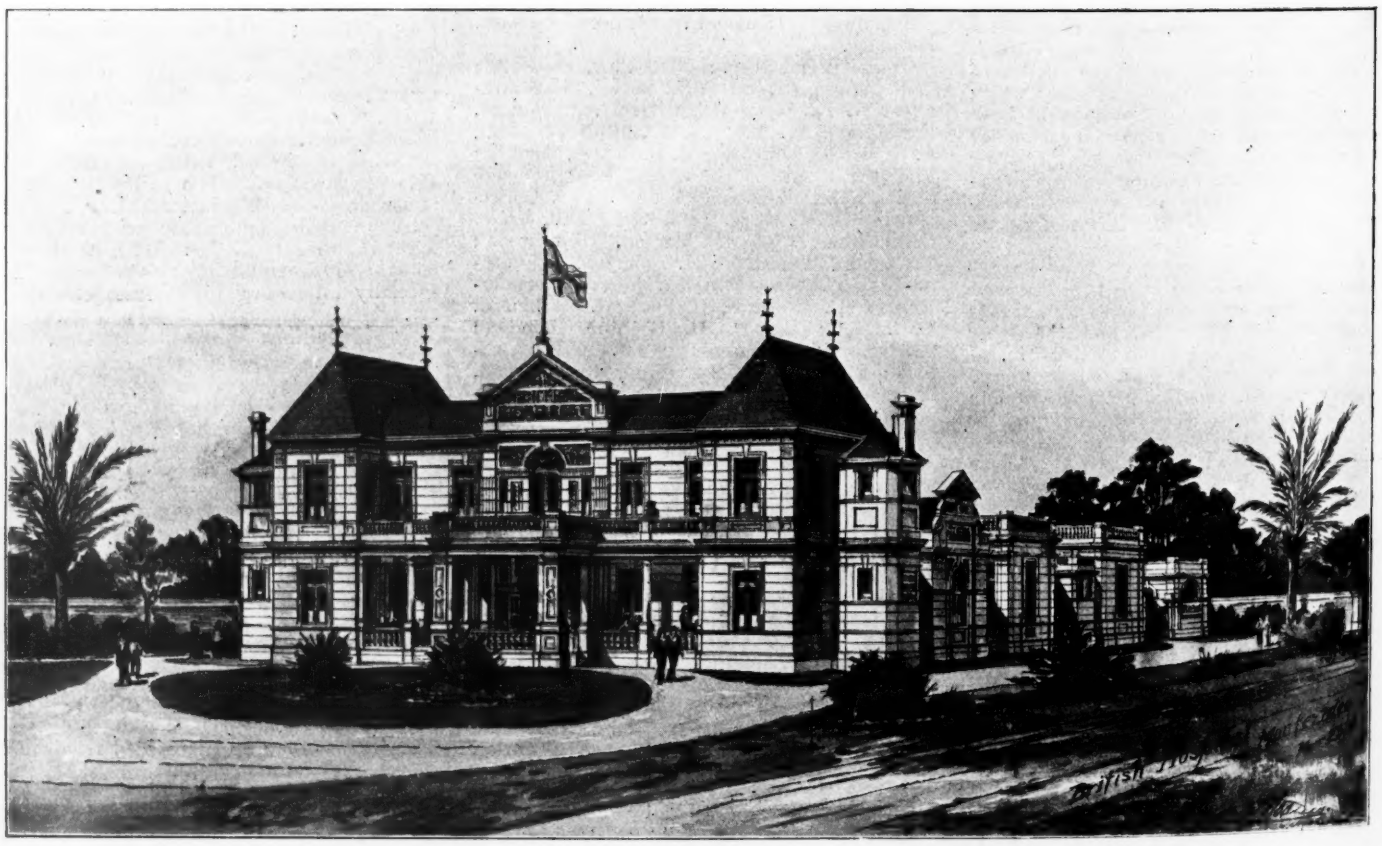
BRITISH HOSPITAL, MONTEVIDEO.

THIS building is now being erected in Montevideo, Uruguay, South America, the architect being Mr. John Adams, an English architect resident in that city.

The construction will have reinforced concrete foundations, silica calcaric (sand and lime) brick walls, plastered on outside with cement rendering, and on the inside Keene's cement finish. Fireproof floors will be built throughout the building and covered with monolite flooring. The roofs will be of hardwood framing covered with French tiles.

A very reduced space compelled the architect to somewhat crowd the ground-floor plan, but the very strong light in Montevideo allows closer planning than in this country.

In designing the building provision had to be



British Hospital, Montevideo.
Mr. John Adams, Architect.

made against the results of a very exposed position and a semi-tropical climate.

This building is estimated to cost 16,000*l.*

The British Hospital in Montevideo is supported by voluntary contributions. It is specially used and appreciated by the British Mercantile Marine, British Railway, and other public companies' employees, as well as by all British residents in Uruguay. It admits all nationalities, some paying patients and many free. The Committee have for their Chairman Mr. R. J. Kennedy, C.B., his Britannic Majesty's Minister resident in Montevideo.

THE LONDON COUNTY COUNCIL.

THE usual weekly meeting of the London County Council was held in the County Hall, Spring-gardens, S.W., on Tuesday, Mr. E. White (Chairman) presiding.

ST. PAUL'S BRIDGE.—The report of the Highways and Improvements Committee on this matter was again postponed after a long discussion. It was recommended in the report that powers should be sought from Parliament for the construction of tramways from Southwark-street over the proposed new bridge to a point near the St. Paul's end of Cheapside, and also of an underground subway.

An amendment was moved by Mr. J. D. Gilbert, for the Improvements Committee, to submit a scheme for the provision of a new street in continuation of the proposed southern approach to the bridge. This was defeated by fifty-three votes to fifty-two.

Mr. L. W. S. Rostron then moved that the question be referred back until the Committee could report on the merits and cost of the scheme as a means of obtaining a through route between the north and south tramway systems. This motion was accepted by sixty-five votes to fifty-one.

LOANS.—It was reported by the Finance Committee and agreed that the following loans should be made:—9,500*l.* to the Fulham Borough Council for electricity undertaking; 1,500*l.* to the Poplar Borough Council for street improvement.

SCHOOL, BATTERSEA.—A workshop for instruction in handicraft is to be erected on the roof playground of the premises in Latchmere-road used by the Battersea Polytechnic.

NEW SCHOOLS.—The following new schools are to be erected:—New school for about 1,200 children on a site in Balgowan-road, Beckenham; new school in the neighbourhood of Gibbon's-road, Willesden; new school for about 1,000 children on a site between Rothschild and Weston roads, Acton.

NORBURY ESTATE.—It is reported that fifteen cottages are to be erected on sect. C of the estate, each cottage to contain four rooms and a scullery. The Architect's estimate for the work is 3,531*l.*

STREATHAM COMMON.—In a report of the Parks and Open Spaces Committee it was recommended that the land and buildings known as "The Rookery" should be purchased for an addition to Streatham Common, and that an amount of 3,075*l.* be sanctioned for that purpose.

CAMBERWELL.—It is proposed to give permission to the Camberwell Borough Council to erect at Grove Lane-garden three greenhouses and a heating chamber.

THEATRES, ETC.—The following drawings have been approved by the Theatres and Music Halls Committee:—

East London Palace, Fieldgate-street, Stepney—provision of permanent cinematograph enclosure.

Nos. 382, 384, and 386, Edgware-road (cinematograph hall)—provision of a motor generator in the basement.

Hoxton Public Baths—provision of permanent cinematograph enclosure.

Nos. 137-141, King-street, Hammersmith (cinematograph hall)—enlargement of entrance and covering of exit passageway.

Middlesex Music Hall—method of ventilation of the premises.

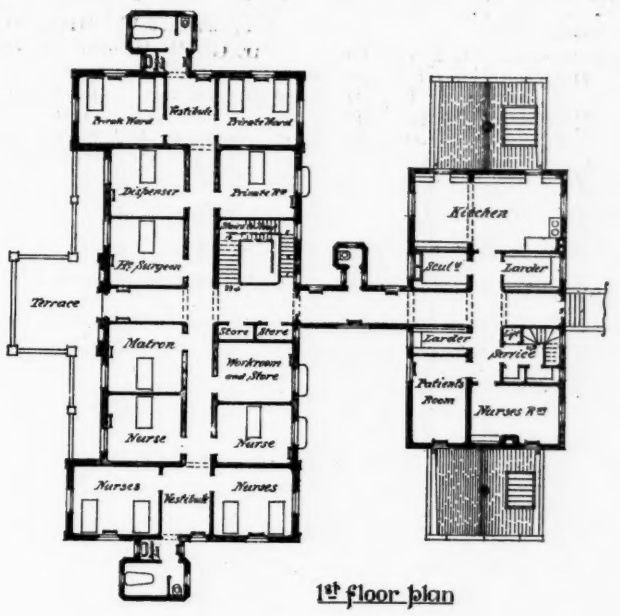
Shaftesbury-avenue (proposed new theatre)—additional lavatory accommodation at pit level.

Victoria Palace, Victoria-street—extension of the stage and provision of a flymen's room and an electricians' room.

NEW HOTEL.—It is proposed to erect a new hotel on a site bounded by Glasshouse-street, Sherwood-street, Brewer-street, and Air-street, W., to include a grillroom in the basement and a winter garden on the ground floor.

PRINCESS HALL, E.—Various alterations are to be carried out at this hall, at 120, Commercial-road, E., including considerable enlargements and new lighting and heating arrangements.

HANWELL ASYLUM.—In consequence of the limited extent of the airing court at this Asylum, the No. 4 male court is to be enlarged at an estimated cost of 200*l.*



British Hospital, Montevideo. Mr. John Adams, Architect.

British Hospital, Montevideo.

WAREHOUSE BUILDING MATERIAL AND ACCESSORIES, ARGENTINA.

The *Boletin Oficial* of September 14 publishes a notice stating that the "Dirección" has accepted the estimate submitted by Messrs. Wayss & Freytag for the rebuilding of the Customs warehouses on wharves Nos. 1 and 2, in Buenos Aires. These warehouses were recently destroyed by fire. The cost of the work is estimated at 955,525 pesos currency (about 84,000*l.*).

COMPETITION NEWS.

The Australian Federal Capital.

Some correspondence relating to the competition for the Australian Federal Capital appears on this page. A letter from the Secretary of the R.I.B.A. dealing with the same matter will be found on p. 509.

Training College, Glasgow.

The following notice appears in the *Glasgow Herald* of October 27 :—

"The Glasgow Provincial Committee propose to erect at Jordanhill, Glasgow, a Training College to accommodate 1,200 students, and, to aid them in selecting a limited number of architects to compete for the intended work, they invite architects willing to take part in the competition to send in their names by November 6 to the undersigned, with twenty copies of a statement containing such information as they may think likely to advance their claims."

The site for the proposed buildings was fixed some time ago, as mentioned in our issue of March 17 last (p. 338), and is a good one for the purpose. We understand, however, that there is a strong feeling locally that a public scheme of this importance—the cost will run well up to 100,000*l.*—should be made the subject of an "open" competition. If otherwise, the selection should in any case be made by skilled professional advisers.

School at Roman Hill, Lowestoft.

The award of the assessor (Mr. A. Morris Butler, F.R.I.B.A.) has been received by the Lowestoft Education Committee and confirmed as follows :—

First—Messrs. Bryan & Hodges, AA.R.I.B.A., 60, Solent-road, West Hampstead, London, N.W.

Second—Mr. W. G. Wilson, F.R.I.B.A., and Messrs. Wills & Anderson, AA.R.I.B.A., 5, Bloomsbury-mansions, Hart-street, W.C.

Third—Mr. Abel Round, M.S.A., 1, Newhall-street, Birmingham.

The premiums offered were 20, 10, and 5 guineas, and fifty-eight designs were received. The accommodation required was for 500 boys.

The whole of the competition designs are on view this week in the Council Chamber, Town Hall, Lowestoft.

Barnsley Public Baths.

The result of the competition for the proposed extension to the Public Baths at Barnsley is as follows :—

1. Mr. E. Burgess, London.
2. Messrs. Bowden & Wallis, London.
3. Mr. E. W. Dyson, Barnsley.

The premiums offered were 50*l.*, 30*l.*, and 20*l.*

Municipal Buildings, Sofia.

H.M. Minister at Sofia reports that the "Commission Permanente de l'arrondissement de Sofia" invite the submission of designs for a new municipal building which it is proposed to erect at that place. Four premiums, to the value of 7,000 francs (280*l.*), 5,000 francs (120*l.*), 2,000 francs (80*l.*), and 1,000 francs (40*l.*) respectively, will be awarded in connexion with the competition. Architects desirous of competing must submit their designs to the "Commission Permanente de l'arrondissement de Sofia," Sofia, by whom they will be received up to 6 p.m. on December 15. Copies of the programme, etc., may be obtained on application to the "Commission," as above. A copy of the programme, together with a drawing, may be seen by British architects at the Commercial Intelligence Branch of the Board of Trade, 73, Basinghall-street, London, E.C.

BOOKS RECEIVED.

THE MECHANICAL WORLD POCKET DIARY. (London : Emmott & Co. 6d. net.)

BUTTERWORTH'S WORKMEN'S COMPENSATION CASES. Edited by His Honour Judge Ruegg, K.C., and Douglas Knocker. (London : Butterworth & Co.)

THE FIRE BRIGADE HANDBOOK. By James Compton Merryweather, M.Inst.M.E. (London : Merritt & Hatcher, Ltd.)

THE COMPETITION FOR THE AUSTRALIAN FEDERAL CAPITAL.

IN our issue for October 20, p. 446, we mentioned that the Minister for Home Affairs of the Federal Government had refused the suggestion made by the architects' associations of Great Britain and America that they should be represented on the Board to determine the competition for designs for the Federal Capital, and below we print some correspondence on the subject which we have just received from Australia.

The following letter was addressed to members of the Institute of Architects of New South Wales by the Hon. Secretary of the Institute :—

"DEAR SIR,—With reference to the competition for designs for the Federal City, as the Federal Government have refused to amend the conditions of this competition in the matter of the appointment of assessors, and the final decision is in the hands of the Minister alone, in spite of the recommendations made by the institutes throughout the Commonwealth as well as the Royal Institute in London, my Council has decided to ask the members of this Institute not to take part in the competition unless the conditions are made more satisfactory.

I am,

Yours faithfully,

ARTHUR WM. ANDERSON (Hon. Secretary)."

The following letters appeared in the Sydney *Daily Telegraph* :—

"SIR,—Referring to the remarks of the Minister for Home Affairs in connexion with the British and Foreign architects taking exception to the conditions of competition for the designs for the Federal City, the preliminary steps in this matter were taken a considerable time ago. When the Institute of Architects of New South Wales communicated with the other institutes of architects in the Commonwealth and, with their cordial consent, offered to the Minister their assistance in drafting the conditions of this competition, the Minister promised to lay the conditions before the institutes before they were published for any suggestions they might make, but he broke his promise absolutely. When the conditions were published this Institute immediately noticed that they were not in accordance with those laid down in ordinary competitions, and communicated in May last with the Royal Institute of British Architects drawing their attention to the unsatisfactory nature of the clauses relative to the adjudication and the final decision being in the hands of the Minister, and asking that if the opinion of the Royal Institute of British Architects was in accordance with the views of the Australian institutes they would assist us by communicating with the foreign institutes.

The British and foreign institutes have done as requested, so that their action, instead of being an expression of a want of confidence in the honesty and impartiality of Australian professional men, is carrying out the request and confirming the judgment of the Australian institutes, and is an expression of want of confidence in the final decision being left in the hands of the Minister.

We have done all we could to assist the Government in obtaining a satisfactory result, but our assistance was rejected, and the present position was inevitable when the Minister refused to be guided by the professional bodies in the Commonwealth. We are emphatically of the opinion that the laying-out of the Federal City is of such permanent and national importance that the conditions of competition should be drawn up in such a manner that they will attract the attention of the world's most gifted town planners.

JOHN F. HENNESSY,
President, Institute of Architects, N.S.W.
ARTHUR WM. ANDERSON,
Hon. Sec. Institute of Architects, N.S.W.
September 11."

"SIR,—The news contained in your columns of the 9th inst. with regard to the Federal Capital designs and Mr. O'Malley's decision that the conditions of the competition cannot be altered is of grave importance to Australia. By refusing to consider the suggestion of the Royal Institute of British Architects that three assessors should be appointed, one from each of the American, British, and Australian institutes, instead of the unknown engineer, architect, and surveyor as now decided, Mr. O'Malley is depriving us of the services of the best architectural talent of Great Britain, Europe, America, and Australia. The Royal Institute of British Architects is a powerful body with far-reaching influence, and Mr. O'Malley's antagonism can only result in placing the united architects of the world in direct opposition to the successful issue of the Federal Capital competition. The assessors in all important competitions in Great Britain are appointed by the British Institute, and every condition must be approved before the members of this body are allowed to compete. Its members now include practically all the practising architects in Great Britain, and it is impossible to hold an important competition there without its approval. In the present instance the British Institute does not insist upon appointing even one of the assessors before allowing its members to compete, but merely desires to approve of a British assessor nominated by the Federal Government. This is a concession that would never have been granted had the conditions been issued in Europe.

If the members of the R.I.B.A. in Great Britain are warned not to compete, this warning will be issued in every country in Europe and in America. The architectural institutes in Australia, affiliated with the parent body, will also be advised, and in the circumstances can only refuse to recommend their members to compete. Thus there will be a world-wide boycott of the competition. Mr. O'Malley relies upon unknown "Continental hundreds" to supply designs in face of all opposition. When the premium was restricted to 1,700*l.* for the premiated design, practically all hope departed of inducing Continental architects to enter into a competition in an unknown, far-away land of which they know nothing and care nothing. These providential hundreds are non-existent, since every "young, progressive, and up-to-date" architect is certain to be a member of an architectural institute, and that institute's warning will be quite sufficient to prevent his unlikely desire to compete. Mr. O'Malley's statement that "there are hundreds of young, progressive, and up-to-date professional men who will compete ; they have a reputation to make ; Australia is a continent, sunny and cheerful, and its city will probably be better planned by men with Continental ideas than those cultivated in a more circumscribed atmosphere," is utter nonsense, and shows astounding ignorance of the position of professional architects all over the world. The British Institute has offered suggestions founded upon a wide experience of the conduct of competitions, and Mr. O'Malley replies with a childish insult. Mr. O'Malley considers that the position taken up by the British Institute shows want of confidence in the probity and impartiality of Australian professional men. It shows nothing of the kind, because architects in Australia are quite in agreement with the British Institute. The advice of the architectural institutes in Australia was ignored by Mr. O'Malley, and it is he who has shown want of confidence in Australian professional men.

If Mr. O'Malley would take his "Continental intellectual" outlook on this competition he would discover that architects in all other countries outside of Australia are the men who plan towns. It is the architect who is trained to design the form of cities as well as of buildings therein, and of necessity he has a knowledge of engineering and surveying sufficient to express his ideas. The help of the engineer and surveyor is invaluable in carrying out the architect's design, but no architect can agree to placing the majority vote in the hands of men untrained to understand the artistic expression of form in the design of a city.

The advice of our architectural bodies has been refused and that of departmental heads accepted. It is but reasonable to conclude that the failure of this competition will result in the appointment of the departments concerned to produce a design. If such a result should come about it will be a discredit to the fair name of Australia, and the Federal City can only be imagined as a town that our descendants will have much trouble, much expense, and much joy in pulling down and reforming.

W. HARDY WILSON.

Sydney, September 11."

CORRESPONDENCE.

Australian Federal City Competition.

SIR,—I have just received from the Hon. Secretary of the Institute of Architects of New South Wales a copy of a notice issued by the Council of that body asking their members not to take part in the competition unless the conditions are made more satisfactory. The Competitions Committee of the Royal Institute are considering this notice with a view to recommending the Council to take similar action as soon as possible. I send you with this a copy of the notice I have received. IAN MACALISTER.

[*** The notice referred to and two letters on the subject appear on p. 508.—ED.]

Cooking Apparatus.

SIR,—We have just been very much interested to have our attention called to the summary of Mr. Harold Gray's article, which appeared in your issue of September 22, on the subject of electric cooking apparatus. As no figures are given in the summary referred to direct comparison is practically impossible, but the following remarks may prove of interest to your readers.

Mr. Gray, in his paper, appears to make two statements concerning the electric oven which require a little consideration. The first of these is, "That a uniform heat is essential," a statement which, we believe, to be incorrect, as the top heat, which Mr. Gray appears to object to so strongly, is that essential feature of baking which so many ovens do not possess, and are for that reason commercial failures. Further than this, it is necessary that this top heat can be controlled at will, for after it has done its work it is necessary to so modify the heat that a steady soaking temperature is maintained, which demands rapid and complete control of the oven temperature, which is, so far, only obtainable with gas-ovens.

The second statement which calls for attention is that in gas-ovens "the food is bathed in the products of combustion of impure gas." This assertion is certainly liable to misconstruction. Anyone unfamiliar with the chemical considerations of combustion and combination would be extremely liable to infer from the above remark that the combination of poisonous substances is bound to give rise to a poisonous result, which is, of course, not a fact, for if we took hydrogen and oxygen in their combustible proportions we should have a mixture suitable for respiration; but the result of the combination of this mixture is water, a substance the hygienic properties of which need not be enlarged upon.

Again, we might argue that the combination of two such substances as sodium and chlorine (each in itself most objectionable and unpalatable, not to say poisonous) would produce a substance unfit to eat and of a poisonous nature; but years have proved that common salt, the product of this combination, is nutritious and extremely necessary. In a similar way experience has proved that the products of gas in a properly designed cooker in no way affects the food cooked therein, and that these cookers are very good to use.

It would be very interesting to know what improvement Mr. Gray's electric oven represents over and above the best of those we have tested, which give the following results:—

With an oven 14 by 12½ by 10 in. the heat in the oven at the start of the test was 61 deg. Fahr. Ten minutes later it had been raised to 390 deg. Fahr., the current used during the ten minutes being ·249 of a unit, representing an hourly rate of 1·494 units of electricity consumed. At the end of the second ten minutes the temperature of the oven was 530 deg. Fahr., the current used during this further ten minutes being ·167 units, representing an hourly rate of 1·002, the total consumption for the twenty minutes being ·416 units of electricity. The current was then so regulated that a temperature of 410 deg. Fahr. was maintained in the oven, and it was found that the current necessary to maintain this temperature was ·532 units per hour, these tests being supervised and checked by a fully qualified electrical engineer.

There is one point particularly worthy of note—it was impossible on the particular oven tested to obtain a temperature of less than 410 deg. Fahr., a temperature somewhat in excess of that required for most cooking operations, and a point which clearly demonstrates the want of control over the heat in electrical ovens.

Having dealt with the oven, we should like to give a few comparative figures on the subject of water-heating, this being of such a nature that direct comparison can easily be made.

An ordinary gas-boiling ring used to heat small quantities of water will give, at a low estimate, 55 per cent. efficient net; or, expressed in another way, it will return in the form of heated water 295 B.T.U. per cubic foot of gas consumed, which, with gas at 2s. 6d. per 1,000 cubic feet, gives a return in heated water of 9,823 British thermal units per penny.

Next, the gas-heated circulating boiler in practice will give an efficiency of 400 B.T.U. per cubic foot of gas used, which, with gas at 2s. 6d. per 1,000 cubic feet, represents 13,320 B.T.U. per penny.

Again, a good geyser as constructed to-day will return in the form of heated water 500 British thermal units of heat for every cubic foot of gas used, which represents (with gas at 2s. 6d. per 1,000 cubic feet) 16,650 B.T.U. per penny. As one Board of Trade unit of electricity represents, if converted wholly into heat, 3,437 British thermal units, it is easy to calculate the number of units of electricity required to give the same amount of heat per penny, as we have shown, can be returned in the form of heated water by the various methods set out above.

The resulting figures are tabulated below:—

NOTE.—In each case the price of gas is assumed to be 2s. 6d. per 1,000 cubic feet.

One pennyworth of gas used in a boiling stove returns 9,823 B.T.U., representing 2·858 units of electricity.

One pennyworth of gas used in a circulator returns 13,320 B.T.U., representing 3·875 units.

One pennyworth of gas used in a geyser returns 16,650 B.T.U., representing 4·83 units.

Assuming a low rate for electrical energy of one penny per unit, the figures given above represent a direct comparison of the cost of gas and electricity, the cost of gas throughout being one penny, the relative cost of electricity being 2·85d. for boiling stoves; 3·87d. for circulators; and 4·84d. for geysers. But it must be remembered that these figures represent cost calculated for gas as it is actually being used to-day, whereas the calculations for electricity allow for 100 per cent. efficiency, which is not the case, to our knowledge.

We trust that these remarks will be of interest to your readers, and that Mr. Gray will see his way clear to give the information sought concerning his improved oven as compared with the test we have set out above.

THE DAVIS GAS STOVE COMPANY, LTD.,
H. A. DAVIS, Managing Director.

New Indian Patent Act.

SIR,—May I through the columns of your paper bring to the notice of such of your readers as are interested in Indian patents the fact that a new Act comes into force in India on January 1, 1912, which will alter the conditions under which valid patents are obtainable? The particular point to which I should like to draw attention is, that, under the new Act, valid letters patent cannot be obtained for an invention which has been previously used or published (as by the printed British specification) in India. Under the present Act, however, it is allowable to file an application at any time within one year of the filing of the British application or of the actual sealing of the British letters patent. Therefore, any intending applicants for Indian patents, of which the corresponding British specifications are now published, or will be published by December 31 next, should take care to have their applications filed before that date.

CHAS. B. KETLEY.

Rating of Land Values.

SIR,—Among many remarkable aspects of recent public affairs, perhaps none is more surprising than the complacency with which middle-class people allow themselves to be despoiled of their hard-earned savings with scarcely a word of protest, and the apathy of powerful trades that are being injuriously affected by recent legislative changes, yet appear voiceless in their own defence, either at meetings or through the journals who undertake to watch over their interests. At the present time, although land valuation has practically added nothing to the revenue, the menacing attitude of the Government towards those who have put their small economies into house property has reduced the capital value of such securities by at least 20 per cent. all round; while, except in very favoured situations, building as a speculation is almost at a standstill. The public are afraid to put their money into what is fast becoming an unnegotiable security; yet the auctioneering world, which represents the investor, and the trade societies and journals associated with building seem to have no more to say on the subject than if we were suffering from an unusually severe winter, or too great bounty of the clouds during the holiday season, or some other matter utterly beyond our control. Friendly societies have not behaved thus in the matter of Mr. George's Insurance Bill, nor the doctors, and they get some relief. Why, then, should the builder and his customer, the investor, without whom the trade can make no progress, continually "take it lying down"? The question is very serious, and becomes hourly more so, for if this new scheme of making site-values amenable to the rates is put in force the present fall in capital value will be followed by another, which, certainly in the case of mortgaged property, will obliterate all but the secured interests; while in many cases the large advances made by banks, building societies, and insurance companies will be unrecoverable.

It seems, therefore, that some kind of obligation rests on those having the ear of the public, and power and authority in association with these vast interests, to exert themselves with the object of preventing so great an injustice being completed as that involved in the proposed change.

Frequently the victim of these recent enactments is not in a position to endure the strain. House property has long been the favourite investment of elderly men, who, by industry and self-denial, have earned the right to an honourable old age and to make provision for their families. It seems, therefore, a cruel thing suddenly to introduce a change which must seriously diminish and in many cases will destroy their means of subsistence; and this at a time when a fresh start in life is almost impossible.

I think, sir, I have said enough to enlist your sympathy in this matter, and will only add that, although fraught with ruin to hundreds of middle-class families, the change will probably prove as delusive financially as the land legislation of two years ago—the real intention being socialistic and destructive.

HENRY CLORISTON.

INTERCOMMUNICATION COLUMN.

Decaying Floor.

SIR,—About three months ago a small bungalow of five rooms was completed by a local builder. It is now discovered that the flooring, which was to have been laid down directly upon 3 in. of cement concrete, rests upon ½ in. only, under which is nothing but rubbish. The latter appears to be damp, and the result is all the boards show signs of damp rot—which apparently is due also to the fact that they have been partially tarred only—and the joists are in the same condition, *i.e.*, badly tarred; linoleum had been laid down or this would not have been found out.

As it is understood, it is impossible to prevent the boards eventually decaying. Would you kindly advise as to some efficient substitute to replace boards for flooring? I should like to know if some substance could be laid which would not necessitate the expense of removal of the joists and everything else under the boards. I am advised "woodblock" flooring might serve, and should like to have some idea of the expense of laying, etc., or whether there is any other patent flooring cheaper and as efficient. S. G. H.

THE BRITISH SCHOOLS AT ATHENS AND ROME.

The annual meeting of the British School at Athens will take place on Tuesday, November 7, at Burlington House, at 5 p.m. The Dean of Westminster will take the chair, and the Director will give an account of the excavations undertaken by the School this year at Phylakopi in Melos. This year the School celebrates its twenty-fifth anniversary, and the occasion will be marked by a festival dinner to be held on the same evening, when Mr. George Macmillan, Chairman of the Managing Committee, will preside. The company will include Lord Morley, and among the speakers will be the Greek Minister (Mr. Gennadius), the Director of the School (Mr. R. M. Dawkins), Professor Ernest Gardner, Dr. Walter Leaf, and Sir Lawrence Guillemard. A short history of the School from its foundation will be produced in honour of the occasion. The annual meeting of the sister School at Rome takes place also at Burlington House on November 21, Professor J. S. Reid, Chairman of the Managing Committee, presiding. In connexion with this meeting there will be an Exhibition of student's work. Mr. J. S. Beaumont, a graduate scholar in architecture of the University of Manchester, has recently been appointed by the Gilchrist Trustees to the Gilchrist Studentship held at the School.

EDITORIAL SUMMARY.

The leading article is entitled "Education and Examination," and deals with the revised syllabus, printed on p. 499, of the Royal Institute of British Architects' Intermediate and Final Examinations.

A second article is given on page 498, commenting on the London County Council Tramways and St. Paul's.

"Notes" (p. 498) include remarks on: "The Oxford 'High' and Overhead Tramway Systems"; "The Crystal Palace"; "Whitechapel Art Gallery"; "The Railway Unrest"; "Regent's Park and the Zoological Gardens"; "The Protection of Ancient Monuments"; "Balliol Chapel."

At the meeting of the Architectural Association on Monday Mr. H. H. Hill, B.A., read a paper on "The Architectural Association Excursion to the Loire, 1911," and showed a number of interesting lantern slides of buildings in the district. The paper is printed on p. 500 *et seq.*

Some information in reference to the Australian Federal Capital Competition appears on pp. 508 and 509.

In our Correspondence Column (p. 509) will be found letters on: "Cooking Apparatus"; "New Indian Patent Act"; "Rating of Land Values."

The Monthly Review of Construction, illustrated (p. 511), contains: "Determining Stresses: Collar-Beam Roof Truss"; "American Society for Testing Materials"; "Keedon System of Reinforced Concrete"; and "Notes."

The Building Trade Section (p. 515) contains: "Workmen's Compensation"; "Cement"; "Building Plans and Building Prospects"; "Applications under the London Building Act, 1894-1909"; "Projected New Buildings in the Provinces," etc.

The first of a series of six public lectures on "The Real Nature of the Problems in Heating and Ventilation Awaiting Solution by the Engineer" was delivered at University College, London, on the 17th ult. by Mr. A. H. Barker, a *résumé* of whose remarks is given on p. 518.

A report of the decision in the case before the Tribunal of Appeal under the London Building Act, *i.e.*, "London and Westminster Bank, Ltd., *v.* the London County Council," is given on p. 520; also the case of "The London County Council *v.* Corbett."

Law Report (p. 521) refers to "Alleged Dangerous Premises at Islington."

MEETINGS.

SATURDAY, NOVEMBER 4.

Aberdeen Architectural Association.—Mr. A. E. Payne, A.R.C.A., and Mr. R. W. Gibbon on "A Holiday in Central France." Illustrated. 7.30 p.m.

Junior Institution of Engineers.—Reception by the President, Sir J. J. Thomson, F.R.S., and Lady Thomson at the Caxton Hall, Westminster. 7 p.m.

MONDAY, NOVEMBER 6.

Royal Institute of British Architects.—Opening address by the President, Mr. Leonard Stokes. 8.30 p.m.

Society of Engineers (Incorporated).—Mr. R. W. A. Brewer on "Two-Cycle Engines." 7.30 p.m.

Liverpool Architectural Society (Incorporated).—The first ordinary meeting of the session. Opening address by the President, Mr. Arnold Thornely, F.R.I.B.A. 6 p.m.

The Incorporated Clerks of Works' Association (Carpenters' Hall, London-wall).—Paper by Mr. E. N. Craig on "Clay Working and the Stock Brick Industry" 8 p.m.

University of London (Victoria and Albert Museum).—Mr. Banister Fletcher on "St. Peter's and other Renaissance Churches in Rome." 5 p.m.

TUESDAY, NOVEMBER 7.

Institution of Civil Engineers.—(1) Address by Dr. W. C. Unwin, F.R.S., the President, and presentation of medals and prizes awarded by the Council. (2) Reception by the President in the Library after the meeting. 8 p.m.

University of London (University College).—Mr. A. H. Barker, B.A., B.Sc., on "The Real Nature of the Problems in Heating and Ventilation Awaiting Solution by the Engineer"—IV. 5 p.m.

Battersea Polytechnic (Lectures on Illuminating Engineering).—Mr. J. G. Clark on "Gas Lighting." 7.30 p.m.

University of London (British Museum).—Mr. Banister Fletcher on "Greek Architecture: The Mycenæan Period." Lantern illustrations. 4.30 p.m.

British School at Athens.—The Festival Dinner, Whitehall Rooms, Hotel Metropole, W.C., to commemorate the twenty-fifth anniversary of the School's foundation. 7.45 p.m.

WEDNESDAY, NOVEMBER 8.

Manchester Society of Architects.—(1) Extraordinary general meeting (2) An informal discussion to be opened by Mr. J. J. Burnett A.R.S.A., Hon. LL.D. 6.30 p.m.

THURSDAY, NOVEMBER 9.

Sheffield Society of Architects and Surveyors.—Mr. W. S. Purchon on "The Architecture of Oxford."

FRIDAY, NOVEMBER 10.

Glasgow Technical College Architectural Craftsmen's Society.—Debate on "The Uses of (1) Stone, (2) Brick, (3) Concrete as Applied to a Country House," by Mr. R. Gilchrist, Mr. W. Orr, and Mr. R. Park. 7.45 p.m.

ILLUSTRATIONS.

Ilkeston Secondary School.

THIS school, about to be erected for the Derbyshire Education Committee, provides accommodation for 204 students. The building has been planned on axial lines, and all classrooms, laboratories, etc., are on the ground floor. The whole of the school is covered with a concrete flat, the Assembly Hall being covered with a dome of the same material. Cross-window ventilation is obtained in all cases by means of dormer windows placed under and over open-corridor roof. The Assembly Hall has been placed in the centre of the quadrangle, being octagonal on plan and having entrances on six sides.

The walls are to be constructed of brick, and the exterior covered with rough-cast. The approximate cost will be under 50*l.* per head, which includes boundary walls, oak fencing, asphalting, and laying out of grounds.

Mr. George H. Widdows, A.R.I.B.A., is the architect.

Hospital and Sanatorium.

THIS design for the Isolation Hospital at Aberdare was placed first by Sir William Emerson in the competition held some time ago. Mr. Edward C. H. Maidman was successful also in the competition for a Consumptive Sanatorium, Cork, adjudicated by Mr. Albert E. Murray, A.R.H.A. An illustration of this building is given also.

Pugin Studentship Drawings: Stamford St. Mary's.

THE tower of this church has never been restored, and is consequently one of the most interesting and valuable examples of the period. Iron bands have been placed along the walls and bolted through, but the original stone cutting has been untouched.

The belfry story windows had originally a central shaft with infilling bars to the main arch; traces of the mitres and base moulds are quite visible, and an old XVIIth-century print hanging in the vestry shows these shafts as existing at that date.

Most of the window openings have been filled in with rough masonry, with the intention of strengthening the tower walls. This infilling has come away and left a fissure all round, showing how this mass only burdens the tower and in no wise helps it.

St. Cuthbert's, Wells.

The Cathedral Church of Wells, by the introduction of long panelled lights to the belfry stage, in the XIVth-century additions to the west towers, established a design which not only in the Diocese of Wells, but throughout the whole West Country, became general in tower building. The Church of St. Cuthbert's is perhaps the finest example of this. The long vertical lines of the mullions and the buttresses, terminating in the pinnacles in which the same vertical idea is expressed, carry away the effect of bulkiness which the plan (being the full breadth of the nave) makes almost inevitable. The church itself has a fine roof, but mostly the remainder is late work of a poor and debased character.

Howden St. Peter's.

St. Peter's tower is the dominating feature for miles around. It has a splendidly dignified effect, sitting at the junction of the four roofs. The bell story is a late XVth-century addition, and is not nearly as good as the rest. A deeply-cut casement mould runs up the jamb and the arch of the long lights, and this gives definition to the mouldings and strengthens the vertical feeling of the design.

FIFTY YEARS AGO.

From the *Builder* of November 2, 1861.

The Affinity between Vigour in Architecture and Music.

THERE is something grand and manly in the wild savage vigour of a Romanesque grotesque. There is none of that fiddle-faddle finish we find in modern marble sculpture. When they wanted finish they could give it—it was done chisel in hand; no rasping, filing, Dannecker-Ariadne-elegance. When they drew a line it was thick—could be seen at some distance; there was none of your petty German, fine-lined, modern Munich, Dusseldorf, Madonna sentiment. They drew a Madonna that could be seen all over the place—it made the people worship a good way off. They cursed hard and worshipped hard; and what they did they did with vigour. But look at a modern German, who gets religious first and then patriotic, over beer, increasing according to *schoppen* consumed.

It has been reserved for Richard Wagner to found a true school of opera, of dramatic music. His first attempts in this style were "Tannhäuser" and "Lohengrin," the former produced at Dresden, in 1845. Here he began to develope his ideas; but it is in his recent works, not yet performed operas—"Tristan and Isolde," "Rheingold" (Niebelungen)—that the full force of this system may be heard. He speaks of the effect the orchestra should have upon the soul thus:—"The great melody, such as I conceive it, which embraces the whole dramatic work, should produce in the soul a feeling similar to that produced by a fine forest at sunset upon the traveller just escaped from the noise of the town. He distinguishes (in the silent solitude) tones of infinite variety—he hears what he has never before heard; and he finds in them a sublime melody he forgets not—he cannot repeat it, but he returns to it over and over again." And such is the effect of a grand composition of Wagner's. I trust a love for Wagner's music may spring up amongst our Goths. A. WARRINGTON.

STATUE OF LORD KITCHENER.

Messrs. Elkington & Co. will cast in bronze the equestrian statue for Calcutta. The stone pedestal, 12 ft. high, will bear four bronze panels depicting episodes of Lord Kitchener's military career; the portrait study of the figure is by Mr. March.

ROTHAMSTED, HERTS.

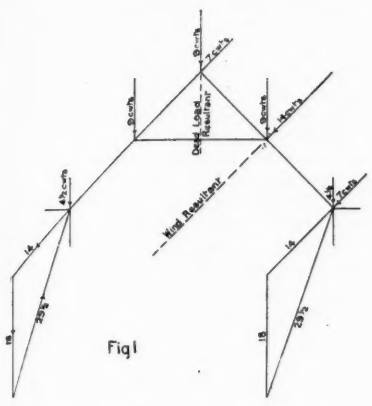
The late Sir Charles B. Lawes-Wittewronge, Bart., effected, under his own directions and superintendence, an extensive enlargement and improvement of his ancestral home at Rothamsted, near Harpenden. There are yet remains of the timber and plaster house to which were made additions, of brick, in the XVIth century. In 1635 the Cressy family sold the property to the Wittewronges, of Flemish descent, from whom it passed to the present family of Lawes. In the hall are the oak beams and posts of the original house; subsequent changes are plainly manifest in the exterior brickwork of the walls, gables, and chimneys, varied in their thickness and colour; the south and main front, of the XVIth century, presents an elevation of four shaped gables having small moulded brick pediments and moulded brick cornices; from above the central porch rises a brick bell-tower capped with a lead-covered clock turret. The dining-room ceiling is a fine specimen of Elizabethan plasterwork; nearly all the apartments are panelled in oak, some in a pleasing version of the linen-fold design; there are handsome oak staircases and richly-carved chimneypieces, with many examples of contemporary furniture of uncommon designs.

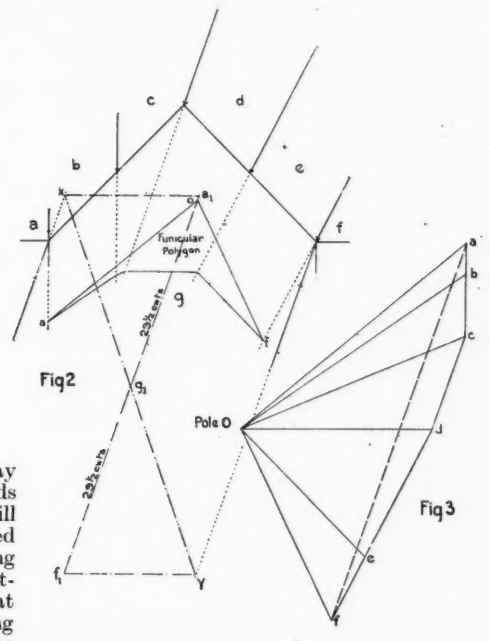
MONTHLY REVIEW · *of* · CONSTRUCTION.

DETERMINING STRESSES: COLLAR-BEAM ROOF TRUSS.

WHEN obtaining the stresses in the various members of roof trusses by means of graphic statics it will be found that the simpler wooden types more often give rise to difficulties than the more complex trusses of larger span in iron or steel.

Considering a collar-beam truss of 20 ft. span loaded, as shown in Fig. 1, the reactions can be worked out without the aid of a polar ray diagram by considering each set of loads separately, *i.e.*, dead load and wind. It will be noticed that each set is equally distributed between the abutments; therefore, combining half the total of each set of loads at each abutment as shown, we get resultants of 29½ cwt. at these points inclined as shown. Reversing their directions we have the reactions at the abutments. The same result is obtained by using the funicular polygon and polar ray diagram, as shown in Figs. 2 and 3. The point o of the funicular polygon is a point through which the resultant of all the forces af must pass. Draw a line through o (a_1f_1) parallel to af and equal to it in length, and through the abutments also draw lines parallel to af. Draw horizontal lines a_1x and f_1y to intersect reaction lines continued as shown. Join xy, which intersects a_1f_1 at g_1. Then a_1g_1 is the amount of the reaction at ag and f_1g_1 the amount at the abutment fg. These will be found to 29½ cwt. each as before. This process is the elementary one of resolving one force into two parallel forces.





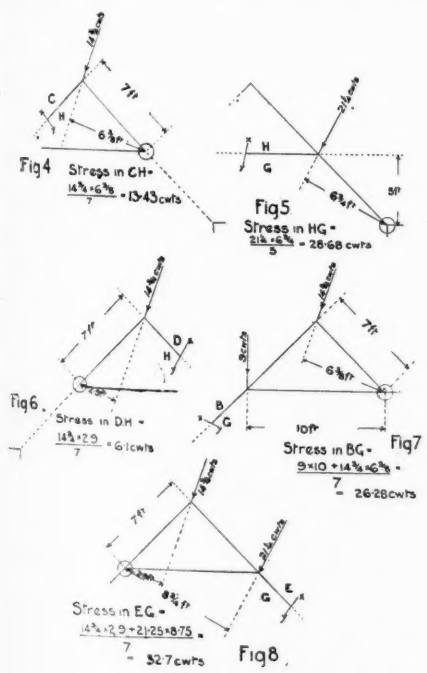


Fig4 Stress in CH = 13·43 cwts
Fig5 Stress in HG = 28·68 cwts
Fig6 Stress in DH = 6·1 cwts
Fig7 Stress in BG = 26·28 cwts
Stress in EG = 32·7 cwts
Fig8

From the information now at hand the stress diagram in most cases could be easily completed, but not so in this case, as the point G cannot be found to enable the "closing" of the stress diagram properly.

This arises from the fact that one factor has been disregarded—a most important one—the bending at the joints of the collar-beam. It is a well-known fact that the tendency of such a truss is to "spread" at its feet, thrusting the walls out sideways. Such being the case, the reactions will not be parallel as we have so far established, but must be inclined to one another, their direction meeting somewhere in the vicinity of the truss.

It is therefore best to determine first the amounts of the stresses in each of the members, and these can be calculated by taking a section through the member and taking moments about the nearest joint.

Taking moments about the joint o in Fig. 4 the

Stress in CH ... ... $= \frac{14\frac{1}{2} \times 6\frac{3}{8}}{7} = 13{\cdot}43$ cwt.

Stress in GH (Fig. 5) $= \frac{21\frac{1}{4} \times 6\frac{3}{4}}{5} = 28{\cdot}68$ cwt.

Stress in DH (Fig. 6) $= \frac{14\frac{1}{2} \times 2{\cdot}9}{7} = 6{\cdot}1$ cwt.

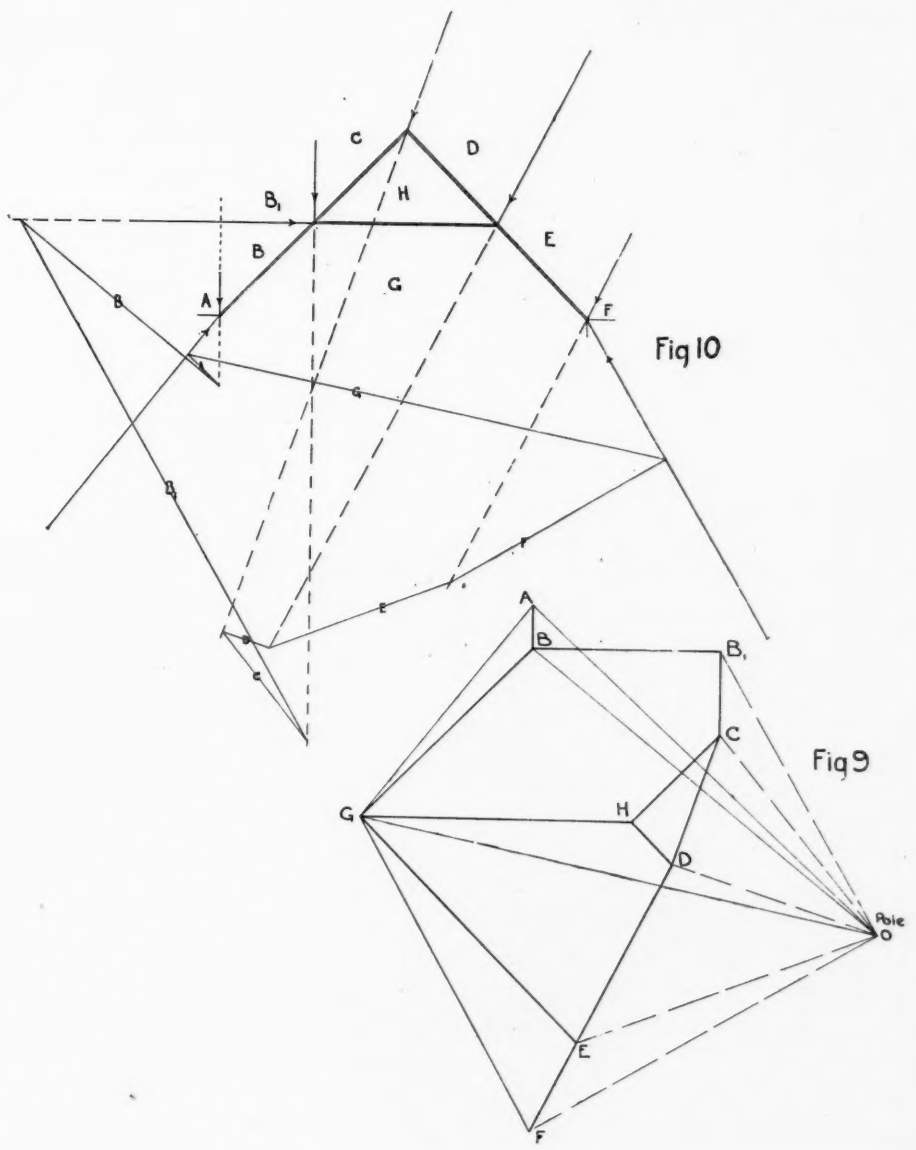
Stress in BG (Fig. 7) $= \frac{9 \times 10 + 14\frac{1}{2} \times 6\frac{3}{8}}{7} = 26{\cdot}28$ cwt.

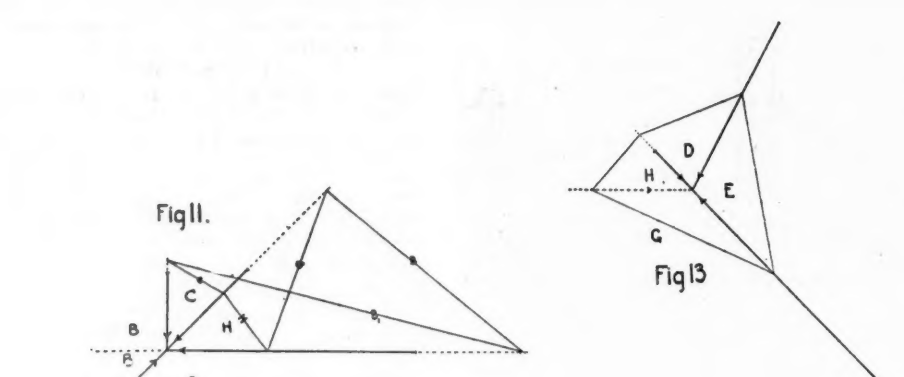
Stress in EG (Fig. 8) $= \frac{14\frac{1}{2} \times 2{\cdot}9 + 21\frac{1}{4} \times 2\frac{3}{4}}{7} = 32{\cdot}7$ cwt.

Thus we know the stress in each member, and they are all compressive stresses. The stress diagram can be constructed from these stresses, and the reactions form the closing sides, as also an extra external force will be found which is necessary to maintain equilibrium.

Take any suitable point G (Fig. 9) and draw GH parallel to HG in the truss, and equal in length (to the force scale) to 28·68 cwt. From G draw the other sides GB and GE parallel to their respective truss members and equal in length to the stress amount. At H draw HC and HD as shown. Join DE, which should be parallel and equal in amount to the external force in the roof at DE, and CD should also correspond to the force on the truss.

From C draw CB_1 vertically equal to CB_1, the external force on the roof of 9 cwt. Draw BA from B in a similar manner equal to 4½ cwt., the amount of the external force AB on the roof. Draw from D force EF (Fig. 9) parallel and equal to EF on the roof. To close the line of loads (Fig. 9) we require a force BB_1 to maintain equilibrium at the joint BCHG. We therefore show this virtual force on the





roof as a load, although really it is a bending resistance in the roof truss.

To find the reactions, join GA and GF (Fig. 9) and draw lines parallel and equal in amount to these intersecting their respective abutments. To prove that all the forces balance one another, complete the polar ray diagram (Fig. 9) and draw the funicular polygon (Fig. 10), when, the last sides of polygon closing, the truss is proved to be in equilibrium and the correct stresses found.

As there is no actual force BB_1 acting externally on the roof truss, this must be exerted by the rafters themselves, and is really their resistance to bending. The method just described may be greatly simplified, as there is a direct method to determine the amount and direction of the virtual force available.

The upper portion of the truss being a triangle, it is self-contained so far as stresses are concerned, and requires no extra virtual force to maintain equilibrium therein. Of course, there are the reactions, but these are provided for by the lower portion of the rafters. We therefore have four joints left—the two at the ends of the collar where the collar-beam joins the principal rafters and the two abutments.

Take first the joint CHG and indicate the various forces there to scale, as Fig. 11. Draw a force polygon (Fig. 12), when it will be seen that a force BB_1 is required to complete the polygon. Take any pole o and draw a polar ray diagram, transferring the rays back to their respective fields (Fig. 11). Where BB_1 meets is a point through which this virtual force acts, and its position is as shown dotted at BB_1 at the joint. The amount of the force is the length of BB_1 (Fig. 12) measured to scale.

The right-hand joint can be worked out in the same way as shown in Figs. 13 and 14, and gives the same amount, *i.e.*, 21½ cwt.

The load line can then be drawn and the stress diagram worked out without trouble. Using graphical methods alone, the same results can be obtained by first considering the loading in the upper portion of the truss, as in Fig. 15. The resultants are obtained from the stress diagram (Fig. 16) where GB = 19½ cwt. and GE = 25 cwt., acting at the inclination shown. Next take the lower portion of the truss (Fig. 17) loaded with these loads in addition to the external loads thereon, and by parallelograms of forces resolve these forces as shown.

The 19½ cwt. at B produces a compressive stress in the rafter of 26 cwt., and a tensional stress in the collar-beam of 11½ cwt. The force at E produces a compressive stress in the collar-beam of 32 cwt. and 33 cwt. in the principal rafter at the end.

The resultant stress in the collar-beam is the algebraic sum of the two stresses, or 32 — 11½ = 20½ cwt. compression. There being no other defined force to resist this, the inertia of the rafters are called upon to perform the duty, which they do by their resistance to bending. Therefore, show this as an external virtual force acting against the collar-beam, as BB_1 (Fig. 10). Combining the loads at the abutments with the lowest loads on the truss gives the amounts and directions of the reactions. The load diagram can now be drawn as before.

The virtual force of 20½ cwt. at BB_1 can be resolved into two parallel forces of 10¼ cwt., each acting in the same direction (horizontally) at the abutments. These multiplied into the leverage to the collar-beam give the amounts of the bending moments at the centre of each principal, or 10¼ × 5 ft. = 51¼ ft. cwt.

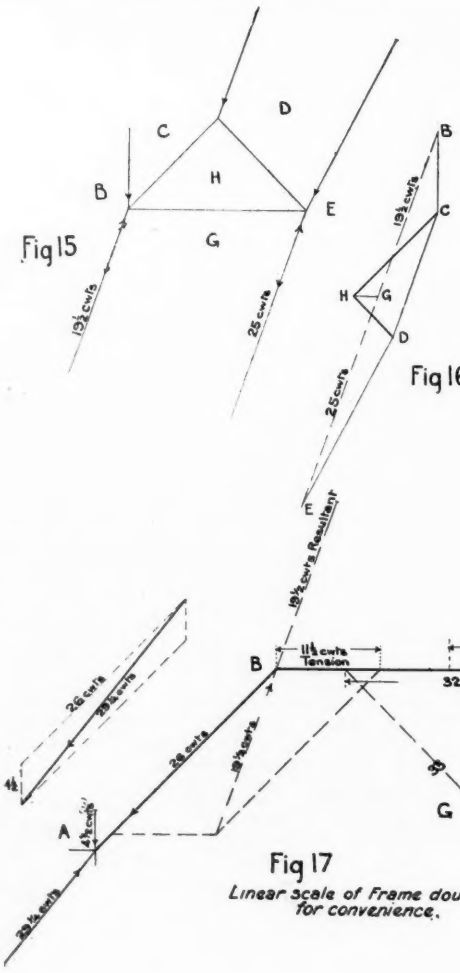
THE AMERICAN SOCIETY FOR TESTING MATERIALS.

THE extremely useful character of this Society is abundantly demonstrated by the subjoined brief summary of the proceedings at the fourteenth annual meeting held in July at Atlantic City. For the convenience of readers who are interested in special subjects, we deal with some of the various reports and papers submitted under classified headings.

Preservative Coatings.

The Committee on Preservative Coatings presented a voluminous report, including the sectional reports of several sub-committees.

The sub-committee undertaking the inspection of test panels and bridge painting at Havre de Grâce reported on the condition of numerous qualities of paint which are still undergoing long-time weathering tests. This eminently practical method of procedure has already had the effect of proving the unreliable nature of some paints, and when the final report is presented it will be a valuable guide for architects and engineers, as well as to paint manufacturers. A similar investigation is in progress at Atlantic City, under the charge of another sub-committee, the plates having been painted by the Association of American Paint Manufacturers.



The sub-committee on linseed oil reported the results of analyses in seven different laboratories, the average results obtained up to the present furnishing reliable constants for raw linseed oil. Their report includes a paper on experiments conducted by the Bureau of Standards to determine the coefficient of expansion of linseed oil from 4 deg. to 40 deg. C., the data obtained being of value in permitting the specific gravity of such oils to be corrected for variations of temperature.

The sub-committee on white paint tests have formulated the details of a comprehensive exposure investigation. Some 120 mixtures will be examined, the grinding and mixing of the paints having been undertaken by Professor Allen Rogers, of Brooklyn. The Pennsylvania Railroad Company have agreed to prepare the panels, which will be painted by the Baltimore and Ohio Railroad Company, and it is believed that the Departments of Agriculture and of Commerce and Labour will arrange for exposure of the panels at the experimental farm near Arlington, Virginia.

The sub-committee on paint vehicles have recently started laboratory tests on the time of drying and the physical character of the films given by various drying, semi-drying, and non-drying oils to which varying amounts of driers have been added. Exposure tests will also be made by the same committee.

A paper on "Further Results of the Westinghouse, Church, Kerr, & Co. Paint Tests," by Mr. C. M. Chapman, gives results of tests of over 1,000 coatings on 3,000 plates exposed to the weather. The object of the tests was to show the protection afforded against rust. The results show that for short periods a single coat of red-lead, white-lead, or one of the chromatic paints is satisfactory. Carbon, graphite, and iron oxide paints appear to be equally useful, and a mixture of graphite and iron oxide seems to be better than either material alone. White-lead appears superior to any other pigment except red-lead for one-coat work after exposure for one or two years. For two-coat work it is best for one year, but other materials show up as well after two years. The durability of red-lead priming was clearly established.

Mr. Henry A. Gardner, in a paper on the "Practical Testing of Drying and Semi-drying Paint Oils," described exposure tests recently started in the grounds of the Institution of Industrial Research at Washington for the Association of American Paint Manufacturers, on forty-eight pine panels, 2 ft. by 3 ft., covered with standard white pigment reduced with a different oil for each panel.

Cement and Concrete.

Mr. Russell S. Greenman read a paper on "Practical Tests of Sand and Gravel for

Concrete." The author recommended sampling sand as delivered and testing by the United States Geological Survey methods. He quoted results showing that any sand can be judged by its percentage of voids, loam, and grading of grains, as determined in the laboratory, and regarded field tests as valuable in indicating the proper proportions of cement for sand as delivered. With several members who took part in the discussion, the author emphasised the importance of determining the percentage of loam in sand and the undesirability of such matter.

The "Expansion and Contraction of Concrete while Hardening" was the subject of a paper by Mr. Albert T. Goldbeck, who referred to experiments made by the United States Office of Public Roads. Specimens of concrete allowed to dry immediately after moulding were found to commence shrinking almost directly, but with very wet mixtures a barely perceptible expansion occurred for a few days. At the end of three months the contraction was about 0·05 per cent. Specimens kept wet showed expansion while in that state, and began to contract as soon as dried, dry mixtures seeming to expand more than those made with more water. The behaviour of the material appeared to resemble that of timber.

Professor Alfred H. White read a paper, entitled "The Destruction of Cement Mortars and Concrete through Expansion and Contraction." This communication, although of much interest and suggesting a field for fruitful research, is one giving laboratory results which for practical purposes must be treated with a good deal of reserve. One conclusion, however, deserving special mention is in confirmation of the fact already known to experts that the use of too much cement in mortar used for rendering is very apt to cause expansion and contraction cracks, for the richer the mixture is in cement the greater is the change of volume as the consequence of temperature variations.

Standard Specification for Steel Reinforcement Bars.

The Committee on Standard Specifications submitted their proposals for steel used in reinforced concrete work, most of the clauses being similar to those generally adopted in this country. Two classes of metal are contemplated—mild and hard steel; the former with the ultimate tensile resistance of 55,000 lb. to 70,000 lb. per square inch and the yield point of 33,000 lb. per square inch, and the latter with the minimum tensile strength of 80,000 lb. per square inch and the yield point of 50,000 lb. per square inch. The draft specification states that hard-grade steel will be used only when specified. Provision is made for smaller elongation in the case of deformed and cold-twisted bars, and for cold bending tests suited to both qualities of steel.

Building Brick.

A paper by Dr. D. E. Douty and Mr. L. L. Beebe described "Some Further Experiments upon the Absorption, Porosity, and Specific Gravity of Building Brick," conducted by the United States Bureau of Standards. The authors find that the best test for absorption is the four-hour boiling method, the results being more harmonious than those of any other,

Fig. 1

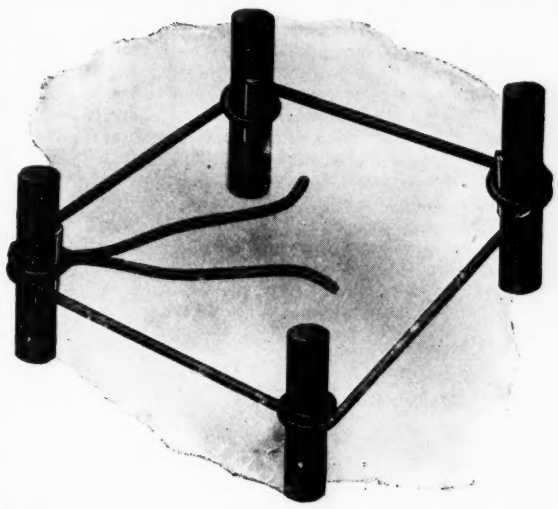


Fig. 2.

and eliminating the injustice done to soft bricks by reliance on short-immersion tests. Some of the results obtained by different methods of testing are given below:—

Method of Testing.	Percentage Absorption.	
	Whole Brick.	Half Brick.
Immersion for ninety days and boiling for four hours	20·5	20·0
Boiling for four hours	20·2	19·9
Immersion for ninety days	18·8	18·7
Immersion for seven days and boiling for one hour	18·3	19·1
Partial immersion for ninety days	18·2	19·4
Vacuum.....	17·7	17·8

Sewer and Drain Pipes.

The Committee on Standard Specifications and Tests for Clay and Cement Pipes presented a voluminous progress report. The work of this section is divided into three classes—(1) To determine the requirements to be fulfilled by sewer and drain pipes; (2) to ascertain the inspection and tests necessary in the case of materials; and (3) to draw up specifications for laying pipes under the usual conditions. An elaborate syllabus has been prepared of points coming into the first two classes, and some of them have been relegated to sub-committees for investigation. Some time will necessarily elapse before the final recommendations of the committee can be formulated for presentation.

Professor A. Marston read a paper on "Methods of Testing Sewer Pipe and Drain Pipe," a communication eliciting a good discussion in the course of which the methods adopted at St. Louis, Brooklyn, and elsewhere were described.

Iron and Steel.

As on previous occasions, a good deal of attention was devoted to these metals, among the chief contributions being a report on the "Corrosion of Iron and Steel"; an important paper by Dr. Allerton S. Cushman on the "Manufacture of Pure Irons in Open-hearth Furnaces"; two papers on "Hardness Tests," one by Messrs. B. Stoughton and J. S. Macgregor; and a report on the "Heat Treatment of Iron and Steel." Four standard specifications for steel were also presented in addition to that for reinforcing bars already mentioned.

THE KEEDON SYSTEM OF REINFORCED CONCRETE.

VARIOUS methods have been introduced from time to time for securing the stirrups or shear members of reinforced concrete beams to the main bars working in tension and compression. The latest device of the kind is that of Messrs. Richard Johnson, Clapham, & Morris, Ltd., of Manchester, the connexion being made by the application of a key, as shown in Fig. 1. Here the stirrup consists of a piece of round steel rod forming a loop through which the main reinforcing-bar is passed and keyed in position, the two ends of the stirrup being bent so as to assume a diagonal position for better resisting tension on diagonal planes in the concrete, and the extremities are bent over at right angles for anchorage.

The same kind of arrangement is adopted for the lateral reinforcement of columns, as represented in Fig. 2.

One manifest advantage of the system is that ordinary merchant bars can be employed as reinforcement, thus obviating the delays that may sometimes occur in cases where specially rolled bars are used, and enabling the builder to obtain material from any steel merchant in the vicinity of the works to be executed.

It is claimed by the patentees that when the web members are keyed in position on the main bars of a beam the series of projections formed at the points of attachment have the effect of constituting an efficient mechanical bond to supplement the natural adhesion between the concrete and the steel. Moreover, it is pointed out that the strength of the material used in the construction of the main bars is not impaired in any way, as the metal retains the original fibre and structure obtained during the process of rolling in the mill. The stirrups are made from high-grade drawn-steel, and, together with suitable keys, are supplied, ready-made, by the patentees, with or without the main bars.

Fig. 3 illustrates the general arrangement of connexions between beams and columns in the "Keedon" system of reinforced concrete, which, in our opinion, possesses the merits of practicability and simplicity.

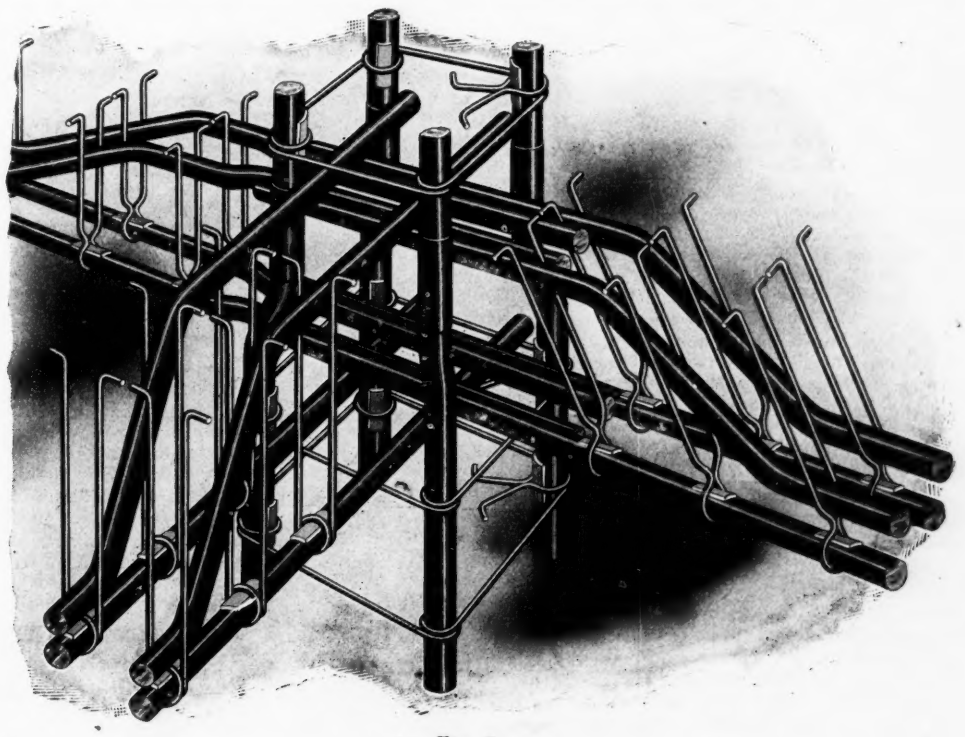


Fig. 3.

CONSTRUCTION NOTES.

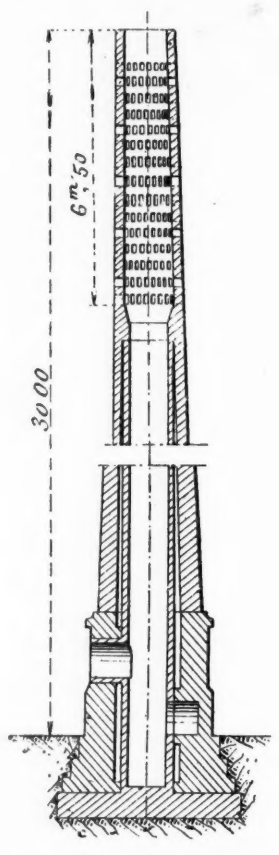
Moving a XIIIth Century Church Tower. In order to facilitate enlargement of the church at Bocholt, a German town near the borders of Holland and Belgium, it was decided to move the tower for the distance of 9·30 metres and to place it on new foundations. The tower dates from the XIIIth century, and it will be readily understood that the operation of shifting so ancient a structure was one involving extreme care. The weight was considerable, the walls were hollow and filled with loose material, and the stones were very friable.

Work was commenced by cutting openings through the side walls for the insertion of twenty-six rolled steel beams, in two groups of thirteen, destined to carry the weight of the tower. Then the north and south foundation walls were laid bare to permit supports to be built up under the ends of the beams, in the supports being incorporated 256 screw-jacks. At the bottom of each support was a concrete foundation, above this longitudinal timbers with transverse ties, then came the jacks and more longitudinal timbers with ties carrying a row of five longitudinal steel beams providing a runway for rollers, and over the rollers were balks of timber faced on the under side with steel plate. Outside the tower a track was formed on concrete foundations constructed on the new site for the structure.

When all preliminaries had been settled, the tower was lifted bodily from its foundations by raising the jacks 25 millimetres. It was then rolled along the track to the new site and connected with the foundations by courses of brick laid in cement. The rollers employed were 60 centimetres long by 5 centimetres in diameter, and the structure supporting them was proportioned so as to keep the pressure on the concrete foundation slab within 25 kilogrammes per square centimetre, and the pressure on the soil within 1·7 kilogrammes per square centimetre. The whole of the work, including construction of the new foundations, was completed within three months at the cost of 45,000 francs.

Americans Control British Timber Reserves. How did Yankee syndicates and capitalists acquire such a grip on British Columbian standing timber that, as the Agent-General for British Columbia recently estimated, fully 50 per cent. of this valuable asset of the British Empire has passed into their hands? Simply because about five years ago the province of British Columbia badly needed money, and, finding that commodity hard to raise through the taxation of a sparse and poor population, threw open its timber limits to prospectors, just as gold claims are open for staking in new countries. The effect of this was to throw practically all the timber of the province on the market at one dump. In 1906 and 1907 about 35,000 square miles of timber were staked, and this made the stakers responsible to the Government for ground rents aggregating 400,000*l.* per annum. But those who had taken up the claims had for the most part no money. They were forced either to cut and sell their timber or to get rid of their claims. Then the shrewd American speculator saw his chance and seized it. Quietly but steadily American banks began buying British Columbian timber limits, and these deals are still in progress. In fact, some who ought to know hold that to-day 75 per cent. of British Columbian standing timber is held by rich Americans. These men will not sell at present; they are doggedly holding for the inevitable rise which must follow hard on the heels of the urgent demand for timber from the three prairie provinces where no trees grow, and settlers by the hundred thousand are each year calling for timber for their frame-houses, from the railways now being completed along the prairies and right into British Columbia, to say nothing of the outlet which the approaching completion of the Panama Canal must provide for British Columbian timber in the Eastern States of America and in Europe.

A Smoke-Diffusing Chimney. In a paper contributed to the German Society of Engineers the author describes a form of chimney-shaft provided with an arrangement in the upper part intended to dilute and diffuse smoke and noxious fumes in the outer air. The diffuser consists of a continuation of the shaft proper, its walls being pierced by conical openings radial to the centre of the chimney, the wider end of each opening being at the outside. Wind enters freely through these openings, breaking up and diluting the upward stream of smoke or gas and creating strong eddies in it. Owing



Smoke-Diffusing Chimney.

to the conical form of the openings, those on the side away from the wind allow comparatively little of the smoke to escape. It is said that practically all the smoke, diluted and whirling in eddies, passes out at the top of the chimney and diffuses itself very rapidly in the surrounding atmosphere. Chimneys of this type are intended particularly for use in places where sulphurous fumes prove destructive to surrounding vegetation, but it seems probable that the idea might very well be applied to boiler chimneys generally in large centres of population.

The Preservation of Timber. Fear of an approaching shortage in the world's supply of timber is causing increased attention to be paid to the methods of preserving timber from decay. This is especially noticeable in the United States, where a number of papers on the subject have recently been published. It is generally agreed that impregnation of the timber with creosote is the best method of treatment, but under the name "creosote" a number of liquids varying widely in composition are being sold, and no one is yet able to say which liquid, or mixture of liquids, is the most effective preservative. Creosote is commonly regarded as a coal-tar distillate, but in recent years large quantities of water-gas tar and its distillates have been used as creosote. Water-gas tar is derived from petroleum or petroleum distillates.

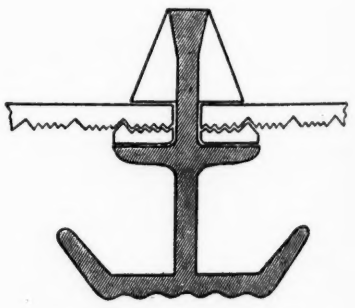
In a paper recently communicated to the New York section of the Society of Chemical Industry Mr. Weiss has shown that coal-tar creosote is a more powerful antiseptic than the so-called creosote oil obtained from oil-tar, but the fact that oil-tar is more abundant in many parts of the United States than coal-tar has induced many to advocate the use of oil-tar or its distillates in admixture with, or as substitutes for, coal-tar creosote. It is claimed that the action of creosote is mainly a water-proofing action, and, therefore, that oil-tar distillates are equally good for timber preservation.

Although coal-tar creosote has been used for timber preservation for more than a quarter of a century, scientific investigations have not yet shown which constituent of the creosote is the most valuable, and specifications for creosote contracts still reveal a great diversity of opinion as to the constitution of good creosote. According to Mr. Charles Forrest, this divergence of opinion is based upon theories unsupported by scientific facts, and causes much trouble to those engaged in the creosoting industry. He complains that the descriptions of creosote mentioned in certain specifications and publications are not available for use in most of the wood-preserving plants erected in America. Some estimate of the magnitude of the creosoting industry in the United States may be formed from the fact that the annual consumption of creosote in that country amounts to fifty-six million gallons.

In England coal-tar creosote is more abundant, but very large quantities of water-gas tar are also made here, and if oil-tar distillates are less effective than coal-tar distillates for preserving timber the fact should be made known. The evidence hitherto published does not conclusively prove that oil-tar distillates are either superior or inferior to coal-tar creosote for timber preservation.

New System of Glazing. A form of glazing bar placed on the market by the French Société du Vitrage Rationnel is designed not only to secure the sheets of glass, but also to receive and drain away water of condensation and any water which may find its way through the joints.

As shown in the accompanying section, the bar is in the form of an inverted T with a second transverse flange for carrying the glass. The lower flange is bent up at the sides to form a gutter beneath the joints. The panes of glass are of special construction, having grooves of



New System of Glazing.

different width and depth, disposed diagonally to the edges of the pane, and designed so as to break up moisture condensed on its surface, the beads of water being conveyed along the grooves and finally deposited in the gutter of the glazing bar.

In roofs where expansion and condensation are anticipated, the panes are placed without mastic, and held in position by a zinc angle strip moulded to fit the upper part of the glazing bar and fixed by screws. The horizontal part of the strip acting as a spring makes a close joint while permitting the iron bar and the glass to expand and contract freely. In cases where expansion is not an important consideration, the panes of glass are bedded on mastic in the usual manner.

THE BUILDING TRADE.

WORKMEN'S COMPENSATION.

THE Home Office has issued the statistics of compensation and of proceedings under the Workmen's Compensation Act, 1906, and the Employers' Liability Act, 1880, during 1910. Returns have been collected from the seven great groups of industries—mines, quarries, railways, factories, harbours and docks, constructional works, and shipping—covering 134,820 employers and more than 7,000,000 employed persons coming within the provisions of the Compensation Act of 1906. In these industries in the year 1910 compensation was paid in 3,510 cases of death and in 378,340 cases of disablement. The average payment in cases of death was 153*l.*, and in cases of disablement 5*l.* 14s. The annual charge for compensation, taking the seven groups of industries together, averaged 7s. 8d. for each person employed. It was lowest (only 4s. 3d. each person) in the case of persons employed in factories, and highest in mines (20s. 2d.) and in docks (20s. 6d.). The total amount of compensation paid under the Act in the seven groups of industries was 2,700,325*l.*, as compared with 2,274,238*l.* in the previous year. Including management and other costs the total charge borne by the seven industries probably amounts to nearly 4,000,000*l.* These figures include, in addition to accidents, cases of the various industrial diseases (now twenty-four in number) included under the Workmen's Compensation Act. Compensation was paid in thirty-six cases of death from disease, and in 4,438 cases of disablement. The total number of original claims for compensation under the Workmen's Compensation Act which were finally settled within the cognisance of the Courts in England and Wales in 1910 was only 3,862; in Scotland, 486; and in Ireland, 658. The decision was in favour of the workman in 78·6 per cent. of the cases.

The returns in the seven grouped industries are made compulsory, but, no such returns being required from the building trade, we cannot extract any exact information as to the burden the Act imposes on this trade.

The heading of factories includes shipbuilding, workers in wood, and the manufacture of machines, appliances, and tools, whilst constructional work includes the construction of railways, tramways, canals, harbours, docks, bridges, tunnels, waterworks, sewers, roads, and engineering works. Thus certain persons comprised in the description of the "Building Trades" may be employed under the above headings, but, as the construction of buildings, except when they form portion of an engineering work is excluded, for particulars concerning the building trade proper we are relegated to the second part of the report, which gives information as regards claims where the Courts have had some seisin of the cases.

Here we find that in England and Wales 702 cases were taken into Court as compared with 637 in 1909, but memoranda were registered also in 435 cases, in which lump sums were awarded, averaging 40*l.* 10s. 3d., and in 507 cases where weekly sums averaging 14s. 8d. were also awarded.

It is impossible to find in the report the total sums awarded as compensation in the building trade, but in the cases settled the lump sums totalled 12,273*l.* and the weekly payments 95*l.* 4s. 6d. The burden placed upon employers is, of course, not represented by the actual sums paid as compensation, firstly, because the costs, etc., were not included in the figures given, nor compensation under contracting-out schemes; and, secondly, because the amount paid to insure against the liability and not the actual compensation paid is the burden placed on the employer. In this latter connexion an observation contained in the report is of especial interest, as from the returns made by the insurance companies it is estimated that the total amount of compensation paid, including legal and medical expenses, bears to the premiums paid in the proportion two to three; thus the actual amount paid in compensation must be increased by one-third to show the burden imposed upon the employer.

It would be more satisfactory if better returns could be obtained as to the compensation paid in other industries than those seven grouped undertakings in which returns are now compulsory.

BUILDING PLANS AND BUILDING PROSPECTS.

THE latest returns published in the Board of Trade *Labour Gazette* as to the building plans submitted to the local authorities in the third quarter of the year so far as they afford any indication of building prospects cannot be considered very satisfactory. As compared with the same quarter a year ago, the returns available for the United Kingdom and Ireland, but exclusive of the County of London, indicate a net decrease in expenditure of 310,116*l.*, or 8·5 per cent. The greatest decrease is shown in dwelling-houses, 461,809*l.*, and shops and other business premises show a decrease of 29,369*l.*, but factories and workshops give an increase of 54,214*l.*, and churches, schools, and public buildings of 112,204*l.*; "other buildings, additions, and alterations" show an increase of 14,644*l.* The statistics as to districts are also interesting, but we only quote those that show an increase and those in which the largest decreases have occurred.

Increases are confined to "other districts in England to those specifically tabulated," 73,528*l.*, or 22·6 per cent.; Wales and Monmouthshire, 7,210*l.*, or 7·2 per cent.; Ireland, 4,123*l.*, or 2·9 per cent., and Lancashire and Cheshire, 3,442*l.*, or 0·6 per cent. The decreases are headed by the Midlands, with 175,616*l.*, or 24·7 per cent., next comes Outer London, with 147,752*l.*, or 21·9 per cent., and then the Northern Counties, with 60,938*l.*, or 36 per cent.

CEMENT.

THE Council of the Institute of Chemistry have inaugurated a series of lectures, the first of which was delivered by Mr. Bertram Blount, F.I.C., at King's College, Strand, on the 26th ult.

In the unavoidable absence of the President, Dr. Beilby, the chair was taken by Professor J. Millar Thomson, LL.D., F.R.S., who opened the proceedings with a reference to the scheme of lectures, which, he said, was an extension of the work of the Institute on lines mainly directed to benefit advanced students of chemistry. Its aim would be to indicate the scope and object of the work actually carried out in various branches of professional chemical practice, as distinct from academic training; while occasionally the lectures would deal with matters of forensic and ethical interest.

Professor Thomson then welcomed the Institute to King's College, and called upon Mr. Blount to deliver his lecture, the first of two, on "Cement," of which the following is a brief abstract.

The lecturer limited his discourse to the consideration of calcareous cements as being of predominant importance, and more particularly to the Portland cement industry, the size of which may be judged by the fact that the world's production is estimated at 25,000,000 tons per annum, valued roughly at 35,000,000*l.* The industry is essentially a chemical one, and in the interests of both manufacturer and consumer is, and should be, controlled by the chemist.

The earliest form of calcareous cement is probably calium sulphate sufficiently dehydrated to form plaster of Paris. Its disadvantage, lies in its lack of plasticity and its liability to attack by water. On the other hand, calcareous cements, properly so-called, while being plastic, are capable of hardening, and are resistant to water. The common fallacy that the setting of lime mortar is due to the action of lime on the sand with which it is mixed was once more exploded by the lecturer. It has long been known that some siliceous materials have an advantage over others as aggregates for mortar. These are known generally as "pozzolanas," and their usefulness depends on the fact that they contain hydrated silica or attackable silicates which interact with lime and form compounds more or less resistant to the action of water. Similarly it has been known that some limestones are better than others in providing strong and resistant lime for mortar.

There seems to be no record that limestones were deliberately and intelligently chosen for the hydraulic quality of the lime which they furnished until the time of Smeaton, who, in considering with what material he should build the Eddystone Lighthouse, ascertained that Aberthaw limestone was undoubtedly hydraulic, and, desiring to know why, applied to Mr. Cookworthy, a chemist of the period, whose office as consultant was creditably fulfilled. It was found that those limestones which were most hydraulic contained the largest proportion of argillaceous material. But, not content with this, he reasoned that this quality might be improved by the addition of what was then known to be capable of conferring hydraulic properties on ordinary lime, and accordingly used trass, a pozzolanic material.

From the subject of hydraulic limes the lecturer went on to discuss the manufacture of so-called "Roman cement," a crude form of Portland cement made by burning lumps of clayey limestone. The foundations were thus being laid of one of the largest chemical industries in the world. Starting with the notion of imitating Roman cement, the progenitors of the Portland cement industry arrived at the idea that when chalk and clay were mixed and burned an hydraulic material was produced which, when ground, would set and form a strong, sound cement. The function of the chemist who concerns himself with this industry was dealt with at some length. When a new works is to be started there has to be considered the nature and available quantity of the raw materials, the accessibility of a supply of fuel, the suitability of the proposed site, the choice of process and the appropriate plant, and such matters of transport, supply of labour, and probable markets, which go far to determine the commercial success of any undertaking. The function of the chemist continues after the works are started, and on him depends the smooth control of the quality of the cement produced.

In the next lecture, to be given in the latter part of November, the chemistry, properly so-called, and testing of cement will be dealt with.

GENERAL BUILDING NEWS.

CATHEDRAL TOWER, BIRMINGHAM.

The repairs to the tower of Birmingham Cathedral have been carried out under the direction of the architects, Messrs. J. A. Chatwin & Son, and it is stated that not a single piece of new stone has been put into the casing. The tower was erected in 1710 from the design of Mr. Thomas Archer, a pupil of Vanbrugh. The cost of the present repairs is about 1,500*l.*, and the contractors were Messrs. R. Bridgman & Sons, of Lichfield.

NEW CHURCH, BOLTON.

St. Barnabas' Church is to be erected at an estimated cost of 10,000*l.*, on a site at the corner of Thomas Holden-street and Chorley Old-road. The design has been prepared by Mr. Frank R. Freeman, architect, of Bolton, and the contractors are Messrs. J. C. & F. Woods, of Bolton.

NEW CHURCH, FARNHAM.

The new parish church of St. Thomas-on-the-Bourne, Farnham, Surrey, has just been completed by Messrs. Mardon & Mills, of Farnham, from designs of Mr. H. S. Sidebotham, of Guildford, in conjunction with Sir Charles A. Nicholson. The materials are the local Bargate stone for the exterior, with a brick for the interior, which has been plastered and distempered white, the dressed work for windows and capitals of pillars being of Doulting stone. The church consists of the permanent and completed chancel and sanctuary, organ loft, with clergy and choir vestries and lavatories, heating chamber, and the first three bays of the nave, the latter being at present only carried to the stop of the arcade with a temporary roof covering. The space below the organ loft is the invalids' aisle, and is so arranged that they can be wheeled into church on the level. The north

aisle is used as the temporary side chapel, but eventually a portion of the old church will be removed from its present site and be rebuilt to the north of the new chancel, for use as the permanent side chapel for day services. This will be the next portion of the building to be undertaken. After that, the naves and aisles will be completed by three more bays, and the clearstory continued from the chancel westwards, and finally the west tower will complete the fabric.

PARISH CHURCH ENLARGEMENT, WALTON, LIVERPOOL.

The original Parish Church of St. Mary and vicarage were founded in 1326. The rebuilding of the present church was completed in 1842, and a complete restoration was carried out in 1887. During Archdeacon Spooner's rectorship great progress has been made in church extension in the large parish of Walton, and two new buildings have been erected and opened for service during the past year. Archdeacon Spooner and the wardens applied for permission to remove the pulpit from the north to the south side of the chancel entrance, to make alterations in choir stalls, necessitated by the removal of the organ to the north side of the chancel, and to introduce additional choir stalls; to erect a side chapel on the south side of the church; to construct arches in the south wall between the proposed side chapel and the body of the church, to furnish such chapel with a communion table, communion rails, and seats, and to make other alterations at a total estimated cost of 2,000*l*. The chapel, which is called the Hornby Chapel, is in memory of the Rev. Thomas Hornby. The architects are Messrs. Nagington & Shennan, of Liverpool.

NEW CHURCH, BRISTOL.

The church of St. John's, Fishponds, has been consecrated by the Bishop of Bristol, and the accommodation is for 529 people. It has been built at a cost of 3,243*l*., including fittings, by Mr. W. F. Read, builder, from the plans prepared by Mr. E. H. Lingden Barker, architect, of London and Manchester.

SCHOOL, JARROW.

The new secondary school which has been erected at Jarrow by the Durham County Council has just been opened. The new building is situated on a site over five acres in extent on the north side of Field-terrace. The main building is two stories in height. The classrooms will provide accommodation for 300 day students, and, in addition, laboratories and lecture-rooms for scientific and technical subjects have been erected. The accommodation on the ground floor comprises six classrooms, a physical laboratory with preparation-room and store, and a chemical laboratory with preparation, store, and dark-rooms adjoining. A gymnasium is provided in the west wing; while in the east wing there is the lecture theatre. The further accommodation on the ground floor includes the assembly hall, two stories in height, with gallery at one end, headmaster's-room, library, and administration-room. On the first floor, in addition to four classrooms, there are the cookery and laundry-rooms, students' dining-room, botanical laboratory, elementary and advanced art-rooms, clay modelling-room, manual instruction workshop, mechanical laboratory, and engineering workshop. Rooms for the assistant mistress and master are also on this floor. The contractor for the school buildings was Mr. T. Lumsden, Jarrow; for the playing-field and fencing, Mr. J. W. Henderson, Gosforth; heating, Messrs. R. J. Ward & Co., Newcastle; tar paving, Mr. E. Clarkson, Boldon; while Messrs. Fell & Co., Hexham, have laid out the grounds. The architects were Messrs. Rennoldson & Newby, South Shields, and Mr. T. Weddell acted as clerk of works. The total cost, including furnishings, etc., is about 25,000*l*.

PIER FOR PORTHCAWL.

At a meeting held in the Exchange Restaurant, Cardiff, it was proposed to erect a pier and pavilion at Porthcawl. Details of a scheme were submitted by Mr. E. McHaig, A.M.Inst.C.E., and it was decided to form a syndicate to obtain the provisional order and apply to Parliament for the necessary powers.

NEW BUILDINGS IN LONDON.

Warehouse and factory, Stamford-street, S.E. (5,000*l*.); Mr. A. Sykes, architect, 45, Finsbury-pavement, E.C. Rebuilding of Woolwich Police Court, S.E., and West London Police Court, Vernon-street, West Kensington, W.; Mr. F. Dixon Butler, architect, Metropolitan Police, New Scotland-yard, Westminster, S.W. House, Kidbrooke-grove, Blackheath, S.E. (4,000*l*.); Messrs. Belcher & Joass, architects, Clifford-street, Bond-street, W.; Messrs. William Taylor & Co., builders, Lower Mall, Hammersmith, W. Pulling down of Nos. 6, 7, 8, and 9, Little Turnstile, Holborn, and erecting blocks of shops and offices over; architects, Messrs. Homer & Lucas, 35, Bucklersbury, E.C.; builders, Messrs. Spiers & Son, St. John's Wood, N.W.

MEMORIAL TO SIR REDVERS BULLER.

The memorial to the late General has been erected in Winchester Cathedral, and takes the form of a black marble tomb on a plinth of polished green marble, surmounted by a recumbent figure in bronze of the late General. The sculptor was Mr. Bertram Mackennal, A.R.A., who has depicted the figure as a soldier in a greatcoat, asleep on the battlefield, a common soldier's blanket beneath him, and a knapsack for a pillow. The memorial was unveiled and dedicated on Saturday last by Lord Grenfell and the Dean of Winchester respectively.

TRADE NEWS.

The "Boyle" system of ventilation (natural), embracing Boyle's latest patent "air-pump" ventilators and air inlets, has been applied to Edenside United Free Church and Hall, Kelso, N.B.

The Shipcote Hall, Gateshead, is being ventilated by means of Shorland's patent exhaust roof ventilators, supplied by Messrs. E. H. Shorland & Brother, Ltd., of Failsworth, Manchester.

The Tempsford School, Beds, has recently been fitted with one of D. O. Boyd's hygiastic ventilating school grates supplied by Messrs. O'Brien, Thomas, & Co., Upper Thames-street, and Excelsior Works, South Bermondsey.

Mr. John Adams, architect of the British Hospital, Montevideo (see p. 506), who is now in London, would be pleased to confer with any British house that would install a heating system throughout the building at a minimum cost.

APPLICATIONS UNDER LONDON BUILDING ACTS, 1894 to 1909.

AT Tuesday's meeting of the London County Council, the following applications under the London Building Acts were dealt with, the names of the applicants being given in parentheses.

Lines of Frontage and Projections.

Battersea.—Retention of wooden hoods at Nos. 8, 10, and 12, Sheepcote-lane, Battersea (Mr. H. Buchan).—Consent.

Battersea.—Projecting clock in front of No. 120, Battersea Park-road, Battersea (Mr. W. Watkins).—Consent.

Deptford.—Building on the eastern side of Warwick-street, Deptford (Mr. H. W. Horsley, for Messrs. Herbert & Sons).—Consent.

Greenwich.—Projecting signboard at No. 191, Westcombe-hill, Greenwich (Southern Automobiles, Ltd.).—Consent.

Hampstead.—Addition to greenhouse on the western side of Parkhill-road, Hampstead (Messrs. Duncan Tucker & Co. for Miss Willing).—Consent.

Holborn.—Erection of a building with a forecourt boundary upon the site of Nos. 245 to 260, High Holborn (Mr. H. P. Monckton for the Pearl Life Assurance Company, Ltd.).—Refusal.

Islington, East.—Retention of a signboard in front of No. 151, Englefield-road, Islington (Blaker Engineering Company, Ltd.).—Consent.

Islington, South.—Projecting one-story shop in front of No. 238, Upper-street, Islington (Messrs. Drivers, Jonas, & Co. for Mrs. C. E. Merson, Mr. R. J. Hayward, and others).—Consent.

Paddington, South.—Retention of a wooden staircase in front of No. 2, Porchester-place, Paddington (Messrs Deacon & Allen).—Consent.

Wandsworth.—Erection of buildings on the western side of Ellerton-road, the southern side of Magdalen-road, and the northern side of Burntwood-lane, Wandsworth (Messrs. Holloway Brothers).—Consent.

Woolwich.—Bay windows to four houses on the northern side of Glenlyon-road, Eltham (Mr. J. J. Bassett).—Consent.

Woolwich.†—One-story building on the western side of Griffin-road, Plumstead, northward of No. 2 (Mr. E. H. Wright for Mr. C. G. Lambeth).—Refusal.

Width of Way.

Bow and Bromley.—Building at the rear of No. 132, St. Stephen's-road, Bow, at less than the prescribed distance from the centre of the roadway of Chad-street (Messrs. Andrews & Peascod for Messrs. Devine & Co.).—Consent.

Deptford.—Addition to a building on the southern side of Mary Ann's-buildings, Deptford (Mr. O. Archer for the Salvation Army).—Consent.

Kensington, North.—Erection of a building on the eastern side of Old Court-place, Kensington (Messrs. J. Barker & Co., Ltd.).—Consent.

St. Pancras, North.—Clubhouse and cottage upon a site on the eastern side of a footway leading from York-rise to Chester-road, St. Pancras, with a forecourt boundary at less than the prescribed distance from the centre of the said footpath (Messrs. Matthews & Son for the Mansfield Bowling Club, Ltd.).—Consent.

Wandsworth.—Erection of a building on the south-western side of a way leading from Mitcham-lane to Eardley-road, Streatham (Mr. W. Bartholomew for Mr. Parker).—Refusal.

Woolwich.—Erection of a building upon the site of No. 1, Beresford-square, and Nos. 1A, 1B, 1, and 2, Beresford-street, Woolwich, abutting also upon Salutation-alley (Mr. R. M. Allen for Mr. G. St. John).—Refusal.

Width of Way and Lines of Frontage.

Kensington, South.—Retention of an external wooden staircase at No. 4, Thurloe-mews, South Kensington (Messrs. W. D. Hodges & Co., Ltd.).—Consent.

Lines of Frontage and Construction.

Islington, North.—Erection of a cat-head crane at No. 6, Hercules-place, Holloway (British Ever Ready Electrical Company, Ltd.).—Refusal.

Lewisham.—Temporary wood and glass showcase at No. 276, Brockley-road, Lewisham (Messrs. Thompson Brothers).—Consent.

Width of Way, Lines of Frontage, and Construction.

City of London.—Iron and glass gangway over George-yard, Bouverie-street, City, at the premises of the *Daily News*, Ltd. (Messrs. Treadwell & Martin).—Consent.

Greenwich.—Steel and iron barge building sheds and a sawmill upon a site on the northern side of Rope-walk, Greenwich, between Anchor and Hope-lane and Angerstein's Wharf, and erection of a steel and iron gantry at the said premises (Messrs. W. Cory & Sons, Ltd.).—Consent.

St. George.—Erection of a steel, iron, and concrete gangway to connect two blocks of the premises of Messrs. Keen, Robinson, & Co., Ltd., over the public way of Denmark-street, Stepney (Messrs. Keen, Robinson, & Co., Ltd.).—Consent.

Width of Way, Deviation from Certified Plans, and Cubical Extent.

St. George, Hanover-square.—Re-erection of a garage building in Pembroke-mews, Halkin-street, Westminster (Mr. E. Wimperis for Messrs. Rawlings Brothers, Ltd.).—Consent.

Width of Way and Buildings for the Supply of Electricity.

Hoxton.—Erection of a fixed girder and movable runway across Bath-place, Hoxton, at the Shoreditch Borough Council's electricity power station (Mr. C. N. Russell for the Shoreditch Metropolitan Borough Council).—Consent.

Space at Rear.

Kensington, North.—Erection of a building upon the site of No. 14A, Pembridge-place, Kensington, with an irregular open space at the rear (Mr. J. S. Beard for Sir W. E. Cooper).—Refusal.

Construction and Alteration of Buildings.

St. George, Hanover-square.—Iron, glass, and concrete staircase enclosure in an open court at the rear of No. 9, Berkeley-square, St. George, Hanover-square (Mr. F. W. Foster).—Consent.

Space at Rear and Alteration of Buildings.

Marylebone, West.—Water-closet addition at the rear of the Wallace Head public-house, Blandford-street, St. Marylebone (Mr. W. G. Ingram for the New London Brewery Company, Ltd.).—Consent.

Buildings for the Supply of Electricity.

Hampstead.—Wooden cooling tower at the Hampstead Metropolitan Borough Council's electricity generating station, Lithos-road, Hampstead (Mr. A. P. Johnson).—Consent.

Alteration of Buildings.

City of London.—Additions and alterations at the premises of the *Daily News*, Ltd., on the eastern side of Bouverie-street, City (Messrs. Treadwell & Martin for the *Daily News*, Ltd.).—Consent.

Formation of Streets.

Wandsworth.—Barriers across Broad-water-road and Khama-street, Garratt-lane, Tooting (Messrs. Grundy, Izod, & Co.).—Consent.

Wandsworth.—Adaptation as a street of a way or part of a way leading from Mitcham-lane to Eardley-road, Wandsworth (Mr. W. Bartholomew for Mr. Parker).—Refusal.

Uniting of Buildings.

City of London.—Uniting of Nos. 4 and 5, Wood-street, City, by an opening at the ground-floor level, so far as relates to the formation of an additional opening at the basement level (Mr. S. Mart).—Consent.

Deptford.—Doors of special construction in lieu of iron doors to four openings at the premises of Messrs. Peek Brothers & Winch, Ltd., Trundley's-road, Deptford (Fireproof Doors, Ltd., for Messrs. Heath & Sons).—Consent.

Newington, West.—Formation of three openings in a party-wall at a proposed garage of the London General Omnibus Company, Ltd., Arch-street, Newington (Messrs. A. L. Gibson & Co. for the London General Omnibus Company, Ltd.).—Consent.

Woolwich.—Erection of additional stories to blocks L, N, and O at the premises of the Western Electric Company, Henley-road, North Woolwich (Mr. B. Dawson).—Consent.

The recommendation marked † is contrary to the views of the Metropolitan Borough Council concerned.

PROJECTED NEW BUILDINGS IN THE PROVINCES.*

ABERDEEN.—House, near Bridge of Dee (1,800*l.*); Mr. W. E. Gauld, 11A, Dee-street, Aberdeen.

Arbroath.—Proposed extensions to Alma Works (3,000*l.*), for Messrs. Francis Webster & Sons, sailcloth, etc., manufacturers. Additions to Dew Ironworks (2,500*l.*), for Messrs. A. Shunks & Son, Ltd.

Askern.—Bank, near the church, for the London City and Midland Banking Company.

Badby.—School (1,140*l.*); Messrs. Smith & Bunning, builders, 18, Lancaster-road, Kettering.

Bedley.—School (5,000*l.*); Mr. J. T. Blackwell, architect, Market-place, Kettering.

Bellshill.—Rebuilding Mossend-street Works, for Messrs. W. Beardmore, Ltd.

Benfieldside (Co. Durham). — Hospital (10,000*l.*); Mr. J. Eltrincham, Derwent-street, Blackhill.

Blyth.—Offices for the Blyth Harbour Commissioners; Messrs. Cackett & Burns Dick, architects, 24, Grainger-street West, Newcastle-on-Tyne.

Bodmin.—Children's home, Beacon-road (435*l.*); Mr. C. F. Hain, builder, care of Mr. J. Pethybridge, clerk, Board of Guardians, Bodmin.

Borrowash.—Proposed school, near Wesleyan Chapel, Nottingham-road (1,000*l.*); Trustees, Wesleyan Chapel, Nottingham-road, Borrowash.

Bryncethin.—School (5,000*l.*); Mr. D. Pugh Jones, architect, Charles-street, Cardiff.

Burford.—Extensions to Grammar School; Mr. P. Elford, Secretary, Education Committee, Oxfordshire County Council, Oxford.

Burnley.—Alterations to school, Abel-street (891*l.*); Mr. E. Jones, Secretary, Education Committee, Burnley Town Council.

Burslem (Staffs).—Lloyds Bank (7,000*l.*); Mr. J. Slater, Wedgwood-place, Burslem.

Cabinteeley. — Dispensary (500*l.*); Clerk, Board of Guardians, Rathdown.

Caehopkin.—School (3,600*l.*); Mr. C. W. Best, County Architect, Brecon.

Cambridge.—School (6,000*l.*); Mr. J. Julian, Guildhall, Cambridge.

Cambusnethan. — Extensions to school (2,000*l.*); Mr. J. King, Russell-street, Wishaw.

Capel Gwndyn.—Chapel; Mr. J. Teinon Williams, architect, Cardigan; Jas. Morgans, builder, Llwyndafydd, New Quay.

Castleford.—Enlargement of Whitwood Mere National School (100 extra places); the Managers.

Chester.—Residence, Curzon Park (1,700*l.*); Messrs. Dickens, Lewis, & Haynes, architects, Shrewsbury; Messrs. Treasure & Son, Ltd., builders, Shrewsbury.

Cleveleys.—Bank, Victoria-road, for the Manchester and Liverpool District Banking Company.

Coppull.—Additions to St. Oswald's Roman Catholic Schools (ninety extra places); the Managers.

Dawlish.—New water scheme; S. F. C. Churchward, Surveyor, Dawlish Urban District Council.

Douglas (Isle of Man).—Artisans' dwellings, Lord-street (3,430*l.*); Mr. F. Cottle, Surveyor, Douglas Town Council.

Dover. — Proposed enlargement of St. Martin's Schools (1,200*l.*); Mr. R. Knocker, Secretary, Education Committee, Dover Town Council.

Dumbarton.—Lodging house (3,000*l.*); Mr. Jas. Bell, architect, Merry-street, Motherwell.

Dundee.—Jute warehouse, Mid-street, for Messrs. Don & Duncan.

Edinburgh. — Buildings, Nicholson-square (2,000*l.*); Mr. T. P. Marwick, 43, York-place, Edinburgh.

Erith (Kent).—Twenty-three houses and laying-out of land, Avenue-road; Mr. W. Egerton, architect, 12, Queen's-road, Erith.

Exeter.—Business premises, Sidwell-street; Mr. J. A. Lucas, architect, Guildhall-chambers, High-street, Exeter. Extensions, Sanatorium (15,000*l.*); Mr. T. Moulding, Surveyor, Exeter Town Council.

Featherstone (near Pontefract).—Homes for aged miners; Mr. W. Hamilton, Fearnley, Featherstone.

Folkestone.—The following plans have been passed:—Motor garage, rear of Marine-terrace, for Mr. A. H. Holbein; Messrs. Bromley & Dahl, architects. Alterations and additions to "Seaholme," The Riviera, Sandgate, for Dr. Wesley Smith; Mr. A. R. Bowles, architect.

Fox Platt.—School; Mr. J. Hyde, Secretary, Education Committee, Mossley Town Council.

Galway.—School (2,000*l.*); Messrs. Cooper & Dickinson, 13, South Frederick-street, Dublin.

Glasgow.—Factory; Mr. T. A. Miller, 12, Renfield-street, Glasgow. Extensions to engine works, Canal-street (2,500*l.*); Messrs. J. Monro & Sons, architects, 28, Bath-street, Glasgow. Extensions to works (3,000*l.*) for the Harvey Engineering Company, 224, West-street, Glasgow.

Harrow.—St. Peter's Church (10,200*l.*); Messrs. Webster & Cannon, builders, 42, Cambridge-street, Aylesbury.

Hebburn-on-Tyne.—Picture hall and theatre; Mr. H. E. Kelvey, 79, Rusholme-road, Manchester.

Heywood and Winton.—Schools (5,000*l.* each); Mr. R. Littler, architect, 16, Ribblesdale-place, Preston.

Hoylake.—High school for girls (9,000*l.*); Messrs. John Lee & Son, builders, Higher Bebington.

Joppa.—Terrace villas, Brunstone-gardens (8,000*l.*); Mr. G. S. Carfrae, 1, Erskine-place, Edinburgh.

Kenley.—Adaptation of Commemoration Hall into boys' secondary school (5,500*l.*); County Architects, Surrey County Council, Kingston-on-Thames.

Kinglassie.—School (7,800*l.*); Mr. G. C. Campbell, Methil, Fifeshire.

Kinning Park (Glasgow).—Rebuilding sawmills (10,000*l.*); Messrs. H. & D. Barclay, architects, 245, St. Vincent-street, Glasgow.

Kirkby Woodhouse.—Church institute and Sunday-school (2,500*l.*); Mr. Louis Ambler, architect, 201, Temple-chambers, E.C.; Messrs. Coulson & Lofts, builders, 37, St. Andrew's-street, Cambridge.

Kirkstall.—Chapel and school; Trustees, Zion United Methodist Church.

Leith.—Extensions to works, Leith-walk (2,500*l.*) for Messrs. Jas. Bertram & Son, Ltd.

Lemington.—Institute; Franklin Brothers, builders, Newcastle.

Leven (Fifeshire).—Proposed additions to Durie Foundry (10,000*l.*) for Messrs. Harry Balfour & Co.

Lisburn.—School (3,000*l.*); Mr. Jas. Hunter, Lisburn.

Long Four (near Londonderry).—School (3,500*l.*); Mr. D. Conroy, architect, 21, Ship Quay-street, Londonderry.

Lower Bebington.—School (1,000 places); Mr. R. P. Ward, Secretary, Education Committee, Cheshire County Council, Chester.

Luton.—Infirmary (6,000*l.*); Messrs. Gotch & Saunders, architects, Market-place, Kettering.

Manchester.—Alterations and additions to Summerset House (1,500*l.*): Mr. J. H. Reynolds and Mr. C. H. Wyatt, Joint Secretaries, Education Committee, Manchester City Council.

Middlesbrough.—Six cottages on asylum ground (220*l.* per house); Mr. S. E. Burgess, Surveyor, Middlesbrough Town Council.

Morley.—Additions to Grove Mills for Messrs. David Bradley, Ltd.

Muirhead. — School, Coupar Angus-road (2,000*l.*); Liff School Board.

Newcastle.—School (5,000*l.*); Mr. Harrison Ash, Newcastle.

Newport (N.B.). — Post-office buildings (2,100*l.*); Messrs. McCulloch & Jamieson, architects, 20, Whitehall-street, Dundee.

Nifferton (East Riding Yorks).—Proposed school, Westgate; J. J. Bickersteth, Secretary, Education Committee, East Riding of Yorks County Council, Beverley.

Nuneaton.—Additions to factory, Seymour-road, for Messrs. H. Slingsby & Son.

Padiham Green. — Additions to school (2,100*l.*); Mr. R. Littler, architect, Ribblesdale-place, Preston.

Paisley. — Extensions to Messrs. Eadie Brothers' works, Violet-street (2,200*l.*); Mr. J. C. Bennett, 12, High-street, Paisley. Alterations and extensions, nurses' home buildings, West Mount; Surveyor, Paisley Parish Council. Church halls, North Croft; Mr. Peter Coates, Garthland-place, Paisley.

Petersfield.—New block at infirmary; Mr. A. J. Mackarness, Clerk. Petersfield Board of Guardians, High-street, Petersfield.

Pontsarn.—Sanatorium (7,177*l.*); Messrs. John Morgan & Son, builders, Monk-street, Pontsarn.

Portobello.—Extensions to Harbour Green Pottery; Messrs. Carlyle & Buchan, 42, Brighton-place, Portobello.

Retford.—Schools (6,000*l.*); Mr. L. Maggs, architect, Shire Hall, Nottingham.

Richmond.—Rearrangement of St. Mary's Schools; architect, care of the Managers.

Rock Ferry (Birkenhead).—School, Lees-avenue; Messrs. W. Tomkinson & Sons, builders, 21, Dansie-street, Liverpool.

Rosemount (near Londonderry). — School (3,500*l.*); Mr. E. J. Foyl, Strand, Londonderry.

St. Austell.—Cottage hospital; Mr. A. Carkeek, builder, Penventon, Redruth.

Shaw (near Oldham).—Picture hall (2,700*l.*); Mr. Herbert Laugman, 120, Lord-street, Southport.

Sheffield. — United Methodist Church, Chantry-road (2,500*l.*); Trustees, Woodstock Church, Sheffield.

Sherburn (Co. Durham).—School (5,000*l.*); Mr. W. Rushworth, architect, Shire Hall, Durham.

Somerton.—School; Mr. A. A. Newman, Secretary, Education Committee, Newport (Mon.) Town Council.

Southampton.—The following plans have been passed:—Ten houses, Newcombe-road, for Mr. W. B. Hill; twenty houses, Newton, Ash Tree, and St. Catherine's roads, for Mr. J. Smith. Plans have been lodged for six houses, Newton-road, for Mr. F. Lowe; also for the development of Atherley Estate, Hill-lane, for Messrs. Jurd & Sanders.

Southend. — Tramway shelter, pierhead (700*l.*); Mr. R. Birkett, Electrical Engineer, Southend Town Council.

Southwick. — Presbytery, adjoining St. Hilda's Roman Catholic Church; Messrs. Jos. Potts & Son, builders, 57, John-street, Sunderland.

Springfield.—Extensions, asylum (3,700*l.*); Messrs. Gillespie & Scott, architects, 4, Queen's-gardens, St. Andrews. Branch store, Arbour-lane, for the Chelmsford Star Co-operative Society.

Station Town.—School; Mr. J. A. L. Robson and Mr. A. J. Dawson, Joint Secretaries, Education Committee, Durham County Council, Durham.

Twickenham.—The following plans have been passed:—Alterations and additions to Brandon's Brewery, London-road, for Mr. W. Simmons; alterations to pavilion, Island Hotel, Eel Pie Island, for Mr. H. G. Marrian.

Walker Gate.—School; Messrs. Marshall & Tweedy, architects, 17, Eldon-square, Newcastle-on-Tyne.

Ware.—Alterations to factory for Messrs. Allen & Hanbury.

West Hyde (Herts).—School (200 places); Mr. U. A. Smith, Surveyor, Herts County Council, Hertford.

Wheal Harmony (Redruth). — Housing scheme; Mr. Sampson Hill, architect, Green-lane, Redruth.

Whitby.—Rebuilding of Custom House Hotel for Messrs. Forster's Bishop Middleham Breweries, Ltd.

Wigan.—A plan has been passed for four houses in Platt-lane for Mr. John Knowles.

Yarmouth. — Maltings, Laughing Image Corner, for Messrs. E. Lacon & Co.

* See also our list of Competitions, Contracts, etc., on another page

BUSINESS PREMISES, GRAY'S INN-ROAD, LONDON.

In reference to our notice on page 479 and illustration in last week's *Builder* relating to this building, the general contractors for the building were Messrs. Patman & Fotheringham, Ltd., London, W.C.

MANCHESTER BUILDING TRADE EXHIBITION.

The Seventh Manchester Building Trades Exhibition, organised by Mr. Walter Cawood, of the City Hall, Deansgate, Manchester, will be held in March next, for a period of eleven or twelve days. The Exhibition is supported, we are informed, by the trade organisations in the North of England, prominent amongst whom are the Manchester, Salford, and District Building Trade Employers' Association, Manchester and District Branch National Registration of Plumbers, and the Institute of Plumbers, Ltd.

BUILDERS' LABOURERS' WAGES.

An adjourned meeting of the National Builders' Labourers' Union was held on the 27th ult. at the Co-operative Hall, Downing-street, Manchester, to consider a letter received from employers in the trade in reply to a communication sent by the officials of the union asking for an increase of wages which would mean a minimum of 6d. per hour. Mr. T. O'Garr, President of the Building Trades Federation, presided. A resolution was passed asking the employers to submit the whole question of wages, rules of employment, etc., to the Board of Arbitration in the building trade, or to an independent arbitrator, with a view to avoiding a cessation of work.

HEATING AND VENTILATION.

THE first of a series of six public lectures on "The Real Nature of the Problems in Heating and Ventilation Awaiting Solution by the Engineer" was delivered in University College on the 17th ult. by Mr. Arthur H. Barker. Sir Aston Webb presided, and said that the lectures were the result of a communication between the Institute of Heating and Ventilating Engineers and the University of London. They were to provide teaching for regular engineering students who might wish to specialise, and for engineers and architects engaged in practice. Architects were supposed to take no trouble in securing the best form of heating and ventilation for their buildings, but that was not the case. It was an extremely difficult thing to ventilate and heat a building used by people of different ages and requirements.

Mr. A. H. Barker then read his paper, the title of which was "On the Real Nature of the Problems in Heating and Ventilation Awaiting Solution by the Engineer." In the course of his remarks the author said :—

"In proposing to discuss the nature of the unsolved problems in heating and ventilation I am fully aware that I am committing myself to a review of the entire field of heating and ventilation. There is perhaps no part of this field which is not replete with problems which have not been fully solved, many of which can in the nature of things never be fully solved.

A considerable part of the science of heating and ventilating may be perhaps described as a science of leakages. Many of the problems which the heating engineer is called upon to solve are similar to one which often confronts the gas engineer—to determine how much of the gas put into a main will leak away before it gets to the customer's burner, or shall I say before it gets past the customer's meter? The solution, of course, depends entirely on the skill and care with which the mains are put in, and perhaps on the skill and care with which the customer's meter is adjusted, on the quality of the ground, and the traffic which passes over it, the temperature, and the number and extent of the minor earthquakes experienced. It is impossible to determine the quantities with precision unless a great many things are known which never can be known exactly.

The function of the heating and ventilating engineer is the application and utilisation of heat and air. In the broadest sense, all these applications may be said to be within his sphere. But this is the age of the specialist, and the applications of heat and air are so numerous that no one branch of engineering can sufficiently deal with them all.

The application of heat and air, as in the case of every other branch of engineering, has been subdivided into a large number of special branches. There is the boiler engineer, who deals with their application at high temperatures for special purposes; the power engineer, the metallurgical engineer, and many others.

At the other end of the scale we have the refrigerating engineer, whose special function is the removal of heat and the expansion of air and other gases, the consequent attainment of low temperatures.

The profession of the heating engineer lies somewhere between these limits, within a region bound by undefined limits of temperature. As regards heat, the greater bulk of his work lies between the limits of 30 deg. and the boiling-point of water. Of course, there are many instances in which he is concerned with the maintenance of lower or higher temperature than these—up to, say, 600 deg. for special industrial purposes—and he is sometimes, though rarely, concerned with very low temperatures.

He has sometimes to deal with high-pressure steam, but rarely above 100 lb. per square inch. His functions, however, in practice, go considerably beyond these bare limits.

As for air, he treats it chiefly at atmospheric pressure in regard to its temperature, composition, cleanliness, humidity. He sometimes has to do with air at low and high pressures. He is concerned to some extent with air compression.

He has to do with laundrywork, cooking apparatus; he has close connexion with the building trades, including that part of the structural design which is out of sight—plumbing, drainage. He has to do with electricity, as far as this form of energy is used for development of heat and for the generation of power in small quantities, especially for such purposes as the driving of fans and laundry machinery. He is also concerned with constructional work, furnace work, refrigeration, and, to some extent, the generation of power.

It will be seen that the sphere of the heating engineer cuts into a large number of other trades, with all of which he is more or less concerned. The special branch with which he is more directly concerned than any other is the maintenance of the temperature in, and the delivery of air into, inhabited buildings. This is the branch with which I shall deal in the first place.

In relation to his *clientèle* the heating engineer occupies a position which is in some respects different from that occupied by other engineers.

There are few private persons wishing to light their houses by electricity, for instance, who would endeavour to carry the work out without the assistance of a specialist. Few persons would venture to put in an engine or boiler or even an acetylene gas plant without trained assistance.

On the other hand, the man who wishes his house to be heated and ventilated can do the work himself after a fashion. He can put large fires in his grate and open his windows. He can buy gas radiators, and connect them to gas pipes which the gas company puts in for him. His domestic staff can dry his clothes by hanging them out on a line or putting them in front of the fire. He can even hire a local plumber to put him in boilers and radiators, or if he is of a mechanical turn of mind he can even do this work with his own hands.

It does not at first sight appear to be a problem of any considerable complexity merely to provide a certain amount of heat and a certain quantity of air to a building.

If, therefore, the heating engineer is to justify his existence, he must be able to show that he can do this work so much better and more cheaply than the unskilled man that it is worth the while of the latter to call in his help.

A considerable part of the real science of heating and ventilation consists in the knowledge of how far the laws of mechanics, physics, and chemistry are not applicable. The study of the negative side of the science is, in practice, at least as important as that of the positive side. It is, for instance, easy enough to determine what would be the heat lost from an air-tight window if there were no wind, no rain, and an even temperature on each side. One of the essential investigations applicable to questions of this kind is how far the ordinary rules of heat transmission are not applicable to such cases. This is the kind of negative science in which heating engineering largely consists.

In this restricted sphere of warming and ventilating buildings the fundamental and comprehensive problem which the heating engineer has to solve is how to provide the most healthy possible conditions within a building at the lowest possible cost. This is the parent problem of the whole subject, and I shall have to ask you to bear with me while I consider it in some detail.

It is necessary for the fully-equipped practitioner to appreciate fully every condition that bears on the solution of this problem. That solution is essentially divided into three parts :—

Firstly, to discover what those conditions are, and, secondly, the means by which they can be provided; and, thirdly, how they can be provided into the easiest and cheapest way.

The third section is an essential part of the problem. It may perhaps be granted provisionally that if a certain temperature is maintained on a thermometer, and if a certain large regular and liberal supply of clean fresh air is thoroughly mixed with the air in a room, this does, with certain limits, constitute healthy conditions.

The production even of these simple conditions in a large number of rooms simultaneously in itself involves the application of a large and complicated set of natural laws, but the study of these is a comparatively simple matter.

The heating engineer will in future have more and more to inquire what is the cheapest way in which equally satisfactory conditions can be secured. It would even at present be of little use to lay down that, in order to secure healthy conditions, certain results must be obtained, if the obtaining of those results is so expensive that the ordinary citizen could not hope to afford them. The effect of increasing the stringency of the requirements is that the ordinary citizen or even the ordinary committee of a public body endeavours to do without them and takes the risk of the results, or he endeavours to get what he considers to be tolerable conditions for himself by means cheaper in first cost. It is for the heating engineer to know not only what are these most desirable conditions, but also how they can now be secured, and the factors which bear on the relative cost of the various methods at present known, and also what is the lowest conceivable cost at which such conditions can possibly be obtained.

There are two distinct elements in the technical success of an installation of heating and ventilation, apart from the question of cost. The perfectly-successful plant is one which secures conditions within a building which are as healthy as living in the open air, and produces a feeling of perfect comfort in the persons using the building. Until these two conditions are both satisfied there is always room for improvement in the result obtained. No conditions can be considered satisfactory, even for a time, however healthy they may be, unless a person subjected to those conditions is maintained in a state of reasonable bodily comfort. If he is not actually conscious of his bodily comfort he ought at least to be unconscious of any discomfort.

This element, therefore, though important, is certainly secondary in real importance. To the commercial engineer it is more important than the other element. A heating engineer who produces conditions which are uncomfortable is brought to book at once. If he produces conditions which are unhealthy though comfortable, he may never be brought to book till the day of judgment, and perhaps not then if he pleads ignorance and throws the responsibility, as I think I shall be able to show, in present conditions, he has a perfect right to do, on the medical authorities, and on the persons responsible for the control of finance.

It would perhaps be satisfactory from a point of view of comfort that a person should be unconscious that any system of heating and ventilation exists or is absent when suitably clad and engaged in any ordinary occupation—that is, that he should be conscious of neither heat nor cold, stuffiness nor draughtiness.

It has latterly been the custom to treat pulmonary diseases, such as phthisis, by what is known as the open-air treatment. The lowness of temperature to which sufferers are often subjected in carrying out this treatment is not infrequently, indeed, usually such as to produce, especially at first, more or less acute discomfort. Such conditions have nevertheless been proved to be of great advantage.

The patient experiences a positive feeling of comfort when he allows himself to be closed in a room that is warm. Such conditions, though extremely comfortable for the time, have a most prejudicial effect on the health of the recovering patient. It is, indeed, quite easy to conceive that perfectly comfortable conditions might be attained in a room which were nevertheless actively dangerous.

It is thus clear that there is no essential connexion between feelings of bodily comfort and the prevalence of healthy conditions, though it is probable that a constant prevalence of conditions which are necessarily uncomfortable does tend to be prejudicial to health. It is not easy to define either what constitutes comfortable conditions, nor healthy conditions. Individuals differ greatly in their estimate of bodily comfort. Conditions which to one person are perfectly comfortable, may to differently-constituted persons represent the acme of discomfort.

In this latter connexion one of the chief difficulties arises from the fact that Nature has made the human body singularly adaptable to whatever conditions it may be placed in. Indeed, it is held by some of the more

advanced medical thinkers that one of the conditions essential to bodily well-being is constant change of condition, and that therefore to maintain a suitable standard of health constant change of atmospheric condition of some kind is essential.

In order to be able even to commence his work on accurate lines the engineer requires to know in minute detail what is the condition of the atmosphere as regards chemical composition, temperature, humidity, and movement, which must be maintained in a room in order to secure not only comfort, but also healthy conditions. The nature of the investigation which must be undertaken in order that this information may be obtained is, as I have said, of the most difficult character known to modern science. For one reason, no scientific instruments have been, or possibly can be, devised which will give the information directly, and even if such an instrument were in existence prolonged observations of such a difficult character would be necessary that is almost beyond possibility that the information should be ever obtained.

The chief function of ventilation is held by some of the most eminent authorities to adapt the condition of the air so that it will be suitable for helping to maintain the proper body temperature.

Most of the theories as to the function of ventilation which have done duty for the past hundreds of years, or since mankind ever thought on the subject at all, have been proved by recent experiments to be wholly erroneous. It is not very long since that carbon dioxide was regarded as an active respiratory poison, and the quantity of this poison in breathing air determined its value or healthiness. It is now known to be not in the least deleterious, even in quantities vastly in excess of that contained in the worst possible breathing air.

According to Dr. Leonard Hill, up to 300 to 400 parts per 10,000 it has no considerable effect on the organism. By another of those marvellous automatic regulating mechanisms, the excess of CO_2 simply stimulates the breathing, the effect of which is that a person immersed in such an atmosphere commences to breathe very deeply. It does not in the least increase the amount of CO_2 in the blood. Small percentages of 100 to 200 parts per 10,000 are of no account. Six hundred parts per 10,000 produce headache, palpitation of the heart, sweating, and the breathing becomes distressing. Higher percentages, 1,100 to 1,200 parts per 10,000 produce coma, but do not quickly destroy life.

An extraordinary fact is that the quantity of CO_2 in the blood is kept constant whatever the nature of the atmosphere breathed, by the automatic regulatory effect of the acid in the blood on the respiratory centres.

When it is considered that the rough rule of thumb hitherto used by the ventilating engineer that the proportion of CO_2 in the breathing air must not exceed ten parts per 10,000, and that this rule was originally arrived at by assuming the theory that CO_2 is an active poison, it will be seen that a radical change in practice may possibly be in sight, although even now the greatest authorities on hygiene adopt this or a similar rule based on a microscopic percentage of CO_2.

Another similar theory which has also been recently exploded is that an excess of oxygen in the breathing air produces more rapid combustion and so endangers life by burning up the body too quickly. It is now known that the body cannot be made to burn quicker, like a fire, by a greater supply of oxygen. A very large excess, however, is poisonous, and arrests the metabolism of the body.

A defect in the quantity of oxygen, such as from 21 to 15 per cent. of the quantity normally present in breathing air, is now known to have very little effect on a healthy subject. A candle will not burn in air containing less oxygen than 17 per cent. of an atmosphere, but the percentage can be lowered to about fourteen without notably affecting the bodily functions. The proportion normally present in the air is about 21 per cent. With 12 per cent. only the breathing becomes altered. With 10 per cent. the colour of the face takes on a leaden hue, the heart palpitates, and bodily and mental activity become difficult. At about 6 per cent. consciousness is lost, and death takes place when the oxygen sinks to 3 to 4 per cent., or about one-sixth part of the quantity normally present in breathing air.

Another theory largely held, but now proved wholly erroneous, is that the presence of ozone destroys the organic germs in the air, and has a stimulating effect on the organism. The extremely minute quantities of ozone, however, present in ordinary air is now known to have no such effect. It is true that concentrated ozone will destroy or oxidise germs, but if ozone existed in the air in sufficient quantity to do any damage to the bacteria it would produce inflammation in the lungs of persons breathing it. What has been supposed to be the odour of ozone in seaside air is now known to be the slight smell of decaying seaweed, and it is certain that there is no greater proportion of ozone in seaside air than there is in any other air.

On the authority of Haldane, there is no evidence whatever of the existence of any poisonous organic impurity in the air of crowded rooms. Expired air is certainly entirely void of particulate matter; it is, in fact, much freer from germs than is the ordinary air of the street.

The smell which is noticeable in crowded rooms, especially in an assembly of uncleanly persons is now known to consist of the products of putrefaction of particles of dirt on the skin and on the clothes. It has no detrimental effect whatever except that it produces a feeling of nausea in persons of æsthetic temperament.

It will be thus seen that all the explanations that have done duty in the past of the undoubted evil effects of breathing bad air are definitely disproved, and it has not even yet been definitely settled what is the feature of vitiated air which does, in fact, or which appears to produce results prejudicial to health or of fresh air, which has a contrary effect.

The smell, temperature, degree of humidity, and absence of movement of breathed air, as well as the presence of disease germs are causes which so far as is at present known produce evil results, but what degree of absence of these features is necessary that there may be no evil results whatever is not known, and perhaps cannot be exactly known for the reasons previously stated.

It is probable that the best opinion on the point is fairly unanimous that the chief evil effects are due to the temperature and the moisture in bad air, which exercise a bad effect on the working of the automatic temperature mechanism of the body.

The presence of these features in bad air make it more difficult for the surplus heat to be abstracted from the body, and produce results which are a direct consequence of that effect. Very little consideration, therefore, will show us what the radical alteration in the theories of ventilation these facts, assuming them to be well established, must produce, and it is difficult to say what changes in practice we are on the eve of witnessing on account of these discoveries.

It is only within comparatively recent years that much attention has been devoted to the humidity of the air as an element in efficient ventilation. If the air is too dry, say, below 50 deg., it has certain evil results. It takes up moisture from every object that will yield it, causes a shrinkage of wood, produces cracks in floors and fissures in beams, and damages furniture. Its effect on the human organism is that it absorbs moisture from the skin, from the nasal passages, mouth, the throat, and the lungs. It makes the skin dry and rough, and aggravates throat and catarrhal troubles, and is in some cases the developing cause of such disorders.

Persons are, as a rule, constantly passing into and out of rooms, which may be very dry, into the outside air, which may be very moist owing to its lower temperature. This is probably the cause of colds and inflammation of the throat and bronchial passages. It produces in some persons a feeling of lassitude. It has a tendency to lower the temperature of the skin too rapidly, owing to a rapid absorption of moisture. On the other hand, air that is too damp interferes with the normal loss of heat from persons, and again causes a feeling of oppression. Now, it is difficult to conceive that variations in the humidity alone can be very serious, because Nature provides an atmosphere which is extremely variable in humidity.

There is one feature in vitiated air which is not directly connected with its chemical composition, but is of very great importance in connexion with healthiness of living inside four walls, that is the amount and character of the dust in the air. Any person who has watched closely the course of a beam of sunlight through the air of a room cannot fail to have observed the innumerable multitudes of dust particles which appear to fill every cubic inch of space. The very smallest movement sets in motion uncountable millions of dust particles, and, if a close watch be kept on the air passing into the nose or mouth of the persons breathing, these particles can be actually seen entering these passages. As expired air is practically free of all particulate matter, it is clear that the dust entering the body through the nose and mouth remains there. Since among these millions dust particles there must be a large number of disease germs, it is obvious that every human being is exposed every breath he takes to the attacks of diseases.

The particular feature of ventilation which helps in removing the dust is that the exhaust or foul air should be taken from the very lowest possible level—if possible from a horizontal grating in the floor—but in any case through an aperture right at the floor level, such that there is no sill or unperforated ledge between the actual floor level and the hole through which the air passes. The reason is that it is found on analysis that there is a much greater concentration of dust particles close to the floor than anywhere else, and the number of particles always increases the nearer the floor.

When air is warmed by contact with hot surfaces there is, to my mind, a great deal of evidence to show that it undergoes some change, the nature of which, so far as I know, has never been properly defined, and I am not sure that even the existence of a change is generally recognised. I can only define the effect of the change as a devitalisation. In my own mind I am satisfied that this change does take place, apart from the change of temperature, the change in the quantity of CO_2, or in humidity. I have no doubt it has much to do with the prevalent unpopularity of central heating for private houses and other buildings as now practised in this country and elsewhere, and particularly with the unpopularity of the Plenum system. The investigation is difficult because at least half of the necessary observations relate to matters which are purely subjective. It has to do with the variable sensations of individuals. So far as my experience goes, air is not affected in this sense by a surface below a temperature of 130 deg. Fahr. Above this temperature it is always noticeable by people who are affected by it, and the hotter the surface the more it is noticeable. It is something, I believe, quite different from the burnt smell which emanates from very hot radiators, and which indefinitely resembles the smell of wet paint. The latter smell is said to be due to the charring of organic particles, but I am certain that the feeling of lassitude to which I have alluded is something different from the presence of this smell.

May I now review the position in which the above discussion leaves us, as seen from the point of view of the ventilating engineer? Please observe that I have not yet said anything whatever in regard to heating, nor in regard to cost; I have only considered the outlines of the root problem of the ventilating engineer, that fundamental problem which meets him at the very outset—what is good air and what bad?

The object is to attain healthy and comfortable conditions by regulating the composition of the air in a room in the broadest sense. We know from experience that untreated vitiated air is injurious to breathe; of that there can be no possible doubt. Neither is there any possible doubt that the air which Nature provides is generally good to breathe as regards chemical composition.

It is, however, within the region of doubt whether and to what extent natural air can be improved for breathing purposes by altering its temperature and humidity and by extracting some of its dust. Nature provides elaborate automatic regulating mechanisms in the human body which counteract the effect of variable temperatures, humidity, and excessive CO_2, and to some unknowable extent provides for the elimination of dust entering

the mouth and nose. It is more than a probability that it is conducive to health to give these automatic mechanisms plenty to do in order to keep them alive. In other words, it is not healthy to make the air so uniform, draughtless, and generally perfect that the automatic mechanisms are allowed to perish or deteriorate by atrophy.

It appears to me to be doubtful whether heating air by means of hot surface does not destroy its vitality. If it is so, the reason for it is entirely unknown. Now we know, or think we know, what is the chemical composition of atmospheric air, although it is more than a little disconcerting to reflect that it is only within the past few years that some hitherto entirely unknown elements have been discovered in atmospheric air in comparatively large quantity. I do not know that any attempt has been made to ascertain what effect, if any, these newly-discovered elements have on the human body.

We also know, in the same doubtful and expectant fashion, what is the composition of expired air, but we do not know, and apparently no man can tell us with certainty, which are the features of expired air, which are deleterious.

We are told that it is not the excess of carbon dioxide, since vastly greater quantities of this gas can be endured without the slightest effect. It is not the deficiency in the quantity of oxygen, nor the absence of ozone. There is no poisonous organic impurity in expired air. There is, however, a smell in a crowded room which, though easily perceptible to the senses, appears to baffle all attempts at chemical analysis. Again, the dangerous ingredient in air is said not to be dust. Dust is not generally dangerous if of an inorganic character, or even if organic and free from certain bacteria or micro-organisms, which are the exciting cause of certain diseases. What, then, is the trouble with vitiated air? The only answer that it is possible to give to this inquiry at present is that it is probably the temperature and humidity (I ask you to mark that word "probably"); it has possibly something to do with the smell, and possibly something to do with the germs, if and when unhealthy persons are present. It may be the lack of movement. It needs no explanation to show from this analysis that if a ventilating engineer wishes to tackle this root problem on sound lines this analysis affords him no assistance whatever.

It is clear that at least one solution consists of making the air in a room good to breathe by sweeping such vast quantities of atmospheric air through it that the difference between the composition of the inside and the outside air is microscopic. This is a kind of counsel of despair. A man normally takes into his lungs 24 cubic ft. or 25 cubic ft. of air per hour. He completely consumes the oxygen in 5 cubic ft.

All our medical authorities, after explaining to us that this or that or the other is not the dangerous ingredient in vitiated air, are careful to safeguard themselves by stating that all they have said does not operate as an argument in favour of diminishing the maximum degree of carbonic impurity to be allowed in breathing air.

I hope I shall not be taken to be committing the absurdity of depreciating the achievements of physiology, that is far from my intention. I yield to no man in my profound admiration for what has been done in this direction. I wish merely to emphasise the extraordinary difficulty—I had almost said the impossibility—of obtaining any reliable results on a matter of such difficulty as this.

Our scientific solution of this root problem is to provide him with 200 times as much at least, or, for good ventilation, with 1,000 times as much. If in any other branch of engineering your authorities demanded a factor of safety of from 200-1,000, what conclusion would you draw as to the state of knowledge in that branch?

But we may be told that fresh air is cheap enough; we can get any amount of it for nothing, and we at least know with a sort of wavering uncertainty that if we do use plenty of it the result is good. But is fresh air so cheap?

It must not be forgotten that whether it is good for them or not people will not have plenty of fresh air unless it is warmed, and unless it is introduced without draught, and that to warm in the most economical way 16,000 cubic ft. of fresh air costs roughly 1 lb. of coal.

If every person in this country, where the climate is mild, were supplied even with 2,000 cubic ft. of fresh air per hour, duly warmed according to the latest Board of Guardians' notions of health and comfort for paupers, it would cost some ten or twenty million tons of coal every ordinary winter, even in a mild climate like this. Every human being gives off per hour a quantity of heat which may be set down as roughly 400-450 B.T.U. This heat is carried away along with the other heat in the ventilating air. We are told even that one of the objects of ventilation is to carry this heat away when all the time we are flinging into the air additional heat, which is also enormously expensive in the mass, and which is also wasted.

Observe the extreme want of logic in the whole proceeding. The heat in the air as such serves no useful purpose; the vast proportion of it which is blown through the room serves no useful purpose beyond that of diluting to a certain arbitrary degree certain products which medical authorities tell us are not in the least deleterious, and all this in order to mask the operation of certain products which appear to be unrecognised, but which certainly are deleterious, for there can be no question that respired air is deleterious to breathe.

What the engineer wants to know is precisely this: If a thousand persons are enclosed in an air-tight room, which is maintained at, say, 60 deg. by some means; if we remove 900 cubic ft. of CO_2 per hour from the air of the room, and 70 lb of moisture, and restore 1,000 cubic ft. of oxygen to it, and remove 400,000 thermal units; and if some means can be found to remove the organic smells and the dust, "will the air be kept in a perfectly fit state to breathe? Will it, in fact, be as good as the outside air? If not, why not? And what else is necessary?

It is in order to avoid—I will not say shirk—the solution of this and similar problems that we are compelled at present to adopt the device of flooding the interior of a building with vast quantities of fresh air. At any rate, this is the best solution that has been hitherto devised, expensive though it is. At present, the problem is not really acute, because the world's coal supplies are still adequate, but the problem will assume another shape when this is not the case."

Professor Cormack proposed a vote of thanks to Sir Aston Webb for presiding.

Sir James Crichton-Browne,

in seconding, said that Dr. Leonard Hill had been making certain experiments on human beings, and his conclusions seemed to point to the fact that we attached too much importance to the carbon dioxide in the air, and that larger quantities can be inhaled without any detriment whatever. Temperature and humidity brought sickness, nausea, and fatigue; what we wanted was a cool, dry atmosphere. If, as the lecturer had shown, microbes increased according to the age of houses, cathedrals and mansions would need to be pulled down and rebuilt every twenty years. The problem had been complicated by past Budgets. But under previous Budgets there had been a window tax, yielding two millions per annum, under which every skylight and every zinc plate for ventilation was liable to taxation. Architects built houses with as few windows as possible, and in Edinburgh a number of buildings were erected without windows at all, lighted entirely by artificial light.

The resolution was carried, and Sir Aston Webb, in responding, said that before architects could do much they must have some definite data from scientific men on which to found a scheme of ventilation. The engineer wanted to lay down his scheme and get the architect to put his buildings round it, but that was not always possible.

NEW COAL EXCHANGE, SWANSEA.

This building is to be erected at a cost of 20,000*l.*, from the designs of Mr. C. T. Ruthen, architect, of Swansea. The designs were selected by means of a competition.

TRIBUNAL OF APPEAL UNDER THE LONDON BUILDING ACT.

London and Westminster Bank, Ltd., *v.* The London County Council.

THE Tribunal of Appeal under the London Building Act (Mr. A. A. Hudson, Chairman) sat at Caxton Hall, Westminster, last Friday, to give their decision in the appeal of the London and Westminster Bank against the decision of the Superintending Architect in regard to the building lines of Wimbledon Park-road and Augustus-road. Mr. Courthope Munroe represented the appellants, and Mr. Daldy the respondents.

The facts of the case, which occupied the greater part of two days, and was reported in the *Builder* of October 20, were as follows:—The bank bought a piece of land some years ago at the corner of Wimbledon Park-road and Augustus-road, Southfields, in view of future development of the district, there being at the time no buildings in the road between Southfields Station and the County boundary. The Bank Company heard that some villas were going to be erected in Augustus-road, and to prevent any building line being established to their detriment they commenced the building of their bank premises, and, proceeding very slowly, got as far as the first story and then stopped work, owing to the action of the Superintending Architect, who fixed a building line for both Wimbledon Park-road and Augustus-road. The Superintending Architect took existing buildings at Seymour-road, nearly a mile away, as determining the building line of Wimbledon Park-road, and he also took the villas nearly erected in the Augustus-road at the time of his visit as the building line of Augustus-road. Further, it was alleged that in determining the building line in the Wimbledon Park-road, he took account of the bend in the road, where the bank premises were situated, and the result of the fixing of the two lines was to practically destroy the bank site. The contention of the appellants was that the whole of Wimbledon Park-road ought not to have been taken into consideration in fixing the line, and, further, that the bank was erected first in Augustus-road, and thus a building line was set up. The County Council held that the Superintending Architect did right in taking the whole road into account, and that there was no reason why that part from Augustus-road to the County boundary should be deemed to be a different part of the road. With regard to the Augustus-road, the contention was that the Superintending Architect was bound to take into account the buildings already there when he visited the place, and these buildings were the villas erected at the same time that the bank was being erected. There was some conflict of evidence as to whether the bank or the villas were erected first.

The Chairman said the Tribunal found there was no general line of buildings except between points A and B on the architect's certificate plan. These points really were between Seymour-road and the beginning of the property of the railway company. With regard to Augustus-road, they found there was no general building line except between points marked A and B, which was between Albert-road and the beginning of the bank property.

The effect of the decision was that there was no building line where the bank premises were erected.

Mr. Munroe asked that, as the bank had succeeded in both particulars, they should be awarded costs.

The Tribunal decided that, taking all the circumstances into account, no order should be made as to costs.

London County Council *v.* Corbett (now Lord Rowallan).

ON Friday last the Tribunal of Appeal sat at Caxton Hall, Westminster, to hear the parties in the matter of an application by the London County Council with reference to the order of the Tribunal, dated August 2, 1906, and the undertaking given by Mr. H. Cameron Corbett (now Lord Rowallan) in respect to the formation of streets on the St. German's Estate, leading out of the southern site of Dowanhill-road. Mr. Cecil Walsh represented the London County Council, and Mr. Macmin the owner of the St. German's Estate.

Mr. Walsh explained that on August 2, 1905, the Tribunal made an order preventing the owner of the St. German's Estate for a period of five years from building on certain portions of their estate so as to enable, if it was thought proper, for roads to be made giving communication with the Forster Estate which adjoined St. German's Estate.

Mr. Macmin took the preliminary objection that the covenant which Lord Rowallan entered into was dead. The order of the

Tribunal said that the County Council should be at liberty at any time before September 29, 1911, to apply to the Tribunal for an extension of the order, whilst Lord Rowallan entered into a covenant not to build on the portions of the estate mentioned before September 29, 1911. That date was passed, and he contended that the covenant was dead and could not be dealt with.

The Chairman said notice was given by the County Council on September 13, and he overruled the objection.

Mr. Walsh, by means of plans, explained to the Tribunal how the two estates were laid out, and asked that the order restricting building on the points shown on the St. German's Estate should be extended for a period.

Mr. Alfred Milwood, from the department of the Superintending Architect of the London County Council, said he visited the estate on October 6. He explained the condition of things with regard to the roads on the Forster Estate.

Answering the Chairman, witness said that a road had been sanctioned on the Forster Estate and agreed upon by the parties, and there was a legal obligation to make it, which would give communication between the estates.

The Chairman said that being so they did not want to go into the state of the road. There was plenty of power under the London Building Act to deal with roads.

Mr. Macmin said that all the roads witness was dealing with were on the Forster Estate and not on his.

Mr. Walsh said that was his difficulty. Development had been so slow on the Forster Estate that they had no guarantee that the roads would be made. Hence they asked for an extension of the order for a time.

Witness expressed the opinion that the restriction on the St. German's Estate should be retained for the present until the roads on the Forster Estate were made.

Mr. Stewart (a member of the Tribunal) said it seemed as if the County Council wanted to keep their pressure on one estate, to get them to bring pressure on the other estate to make roads.

Mr. Macmin: Yes, and over whom we have no control.

The Chairman said the idea of holding this site open seemed to be to make the Forster Estate go quicker.

Questioned by Mr. Macmin, witness admitted that when the County Council sanctioned a large group of roads on the Forster Estate they made no provision or agreement as to the construction of the roads to take in the pieces of land reserved under the order of the Tribunal.

Mr. Walsh said that there was an appeal by the Forster Estate to the Tribunal in 1907, and the case was adjourned for the express purpose of negotiations taking place between the parties regarding the joining up of these roads. The case had never been resumed.

After considerable discussion with regard to whether the appeal of the Forster Estate in 1907 had reference to dealing with the land reserved by the order,

The Chairman said they had better leave this matter out and confine themselves solely to the question of whether the roads sanctioned on the Forster Estate did afford such communication between the estates as would make the restrictions on the land on the St. German's Estate unnecessary.

Mr. Ernest Van Putten, Engineer and Surveyor to the Lewisham Borough Council, said that his view was that the residents in Birkhall and Balloch roads, and other roads on the St. German's Estate, would suffer great inconvenience in getting to Bellingham and Bromley Stations unless they got a further communication.

Mr. J. Slater (a member of the Tribunal) said that even if they retained the restriction, what power had either the Council or the Tribunal to say that a road should be made?

Witness said he thought by negotiation with the Forster Estate they might get over the difficulty.

Mr. Slater said that was what they tried to do four years ago.

Witness said at that time the Forster Estate were absolutely against making any communication at all. Now, however, they were making two roads, and they might be induced to make a third to communicate with Muirkirk-road.

Mr. Macmin said he had the Surveyor of the Forster Estate present, who would say his clients had absolutely no intention of making the third road. They did not want communication with the St. German's Estate, as they considered their property was superior to that on the St. German's Estate. After five years he thought they ought to be able to wind up their estate. He submitted that the communications which were wanted five years ago had been made on the Forster Estate.

After further discussion between the parties, the Chairman said the Tribunal felt that the St. German's Estate owners ought to have the opportunity of winding up their estate, and they suggested that the parties should try to arrive at a settlement.

Ultimately the case was adjourned for the following suggestions to be considered:—The St. German's Estate to be at liberty to make a road in continuation of Muirkirk-road up to the estate boundary, although such road would be a *cul de sac*. The St. German's Estate to be at liberty to build houses fronting such road, and the restriction on the continuation of Ardock-road to be not extended; these suggestions to be the subject of agreement between the Council to the estate, or to be made the order of the Tribunal.

Mr. Macmin said if they agreed they would come before the Tribunal with the minutes of an order.

No order was made as to costs.

WESTMINSTER CITY COUNCIL.

AT the fortnightly sitting of the Westminster City Council, on October 26, the following, amongst other matters, were dealt with:—

Widening of Argyll-place.—The Improvements Committee reported having considered communications from H.M. Commissioners of Woods and Forests to the effect that it will shortly be necessary to settle definitely designs for the rebuilding of Crown property in various parts of Regent-street, and as a result the Committee considered that the widening of Argyll-street at its junction with Regent-street should be now decided upon, as such a widening is likely in the future to lead to the development of Great Marlborough-street into an alternative thoroughfare to Oxford-street, between Bond-street and Soho. They therefore recommended that the Council should purchase from the Crown 1,107 sq. ft. of land for 16,500*l.*, which will allow the widening of Argyll-place, between Regent-street and Kingley-street, to 60 ft. Mr. G. W. Lawrence pointed out that the matter wanted careful consideration, because great as would be the boon in making the alternative thoroughfare, still it must be realised that the rest of the roadway would probably remain narrow for several generations. Mr. H. Simm pointed out that the price asked was an enormous one, and practically represented 800*l.* per foot for 20 ft. of Regent-street. After further discussion the recommendation was agreed to.

Widening of Pimlico-road.—The same Committee stated that the Highways Committee had asked them to consider the question of improving the junction of Commercial-road and Ebury Bridge, by the removal of No. 1, Pimlico-road. At the present time the Committee did not feel justified in materially altering the property, which is occupied by the Council. They are of opinion, however, that the site should be dealt with by a comprehensive rebuilding scheme, and that, in the event of such a scheme being formulated, consideration should be given to the carrying out of a suitable improvement of the site. In the meantime they agreed that the pavement should be set back 3 ft.

LAW REPORT.

KING'S BENCH DIVISION.

(Before Mr. Justice COLERIDGE.)

Alleged Dangerous Premises at Islington.

Sugden *v.* City of London Brewery Company.

THIS case was heard last week, an action by the plaintiff to recover possession of the Island Queen public-house, Hanover-square, Islington, together with the outbuildings and offices. It raised the question whether the tenants of public-house premises with outbuildings and stables were liable to rebuild a portion of the premises pulled down in conformity with a notice from the local authority that the premises were in a ruinous and dangerous condition.

Mr. I. B. Matthews appeared for the plaintiff, and Mr. Edgar Foa for the defendants.

Mr. Matthews said it was alleged that there had been a breach by the tenants of the covenants to repair. In May, 1910, the stables had fallen into such a state of disrepair that a notice was served upon the tenants, under the Conveyancing Act, requiring them to do the necessary repairs. They refused, and the question was whether upon the facts, which were really undisputed, the landlord was right in seeking to recover possession. The indenture was dated September 20, 1894, and the covenant provided for proper repair of the premises. The defendants pleaded that the stables were originally of defective construction, and that it was due to that fact that they had fallen into a dangerous condition. They further pleaded that the continuance of the covenant became impossible in consequence of the notice of the County Council.

The defence (went on Counsel) was evidently based upon the application of the case to that of Lister *v.* Lane. By Lister *v.* Lane, if one leased to a man a house which at the time of the demise was so faultily constructed that it was bound to tumble to pieces before the expiration of the term under the covenant to repair, then the man was not obliged to rebuild. He (Counsel) submitted that Lister *v.* Lane only applied when the whole of the subject-matter at the time of the demise was in the condition which brought about the state of things complained of. Where only a subsidiary portion of that which was demised had fallen into disrepair, Lister *v.* Lane could have no sort of application. The stables in this case were a subsidiary part of the whole property demised. The plaintiff did not accept the defendant's view that the dangerous condition of the stables was due to the settling of the foundation. He attributed the dangerous condition to a weight being placed on the floor of the loft greater than the floor was calculated to bear, thus causing the walls to be thrust out of the perpendicular. Undue weight had been placed upon the rafters. The defects might have been repaired if they had been attended to in time.

Evidence was called for the plaintiff in support of the contention that the dangerous condition of the stables was attributable to undue weight having been placed on the floor of the loft.

On behalf of the defendants evidence was called to prove that the ground on which the stables were erected was made up, and that the foundation of the building was bad.

Without hearing Mr. Foa on the law, his Lordship gave judgment for the defendants. He came to the conclusion that the walls were erected on a bad foundation, and that the roof was of defective and faulty construction. If he was right in the view that these were the causes which produced the mischief, then they did not come within the provisions of the covenants of the lease, and it did not lie on the tenants to make good the mischief caused by those two defects.

Judgment was accordingly entered for the defendants, with costs.

LONDON COUNCILS.

Acton.—The Works Committee have decided that the work of erecting a school for 860 children should be proceeded with.

Bethnal Green.—With regard to the alterations to be carried out at the Public Baths and Washhouses, where the committee-room and superintendent's office is to be converted into eleven men's first-class baths, the following tenders have been accepted:—Messrs. Measures Brothers, Ltd., steel girder and two steel stanchions, 18*l.* 1s.; Messrs. Doulton & Co., Ltd., eleven porcelain baths and fittings, 155*l.* 7s. 6d.; Messrs. Ellis, Geary, & Co., terrazzo work, partitions, and flooring, 75*l.* 19s. 3d.; Messrs. J. Wonter Smith, Gray, & Co., calorifier, 71*l.* 10s.

Croydon.—An offer of 4,200*l.* has been received from Dr. Carnegie for the erection of a public library at Thornton Heath. The following plans have been passed:—Messrs. Drake Bros., Shirley, near Croydon, ten houses, Silverleigh-road; Mr. R. C. Palmer, Sherwood-road, five houses, Elmgrove-road.

East Barnet Valley.—The Surveyor has been instructed to report as to sites for public conveniences at the top of Station-road and near the Arch, East Barnet-road. Paving works are to be carried out in Bulwer-road, Leicester-road, Station-road, Lytton-avenue, and Victoria-avenue.

Hammersmith.—The Council have decided to raise no objection to the proposal of the managers of the St. Stephen's Roman Catholic Schools, Rylett-road, Hammersmith, to enlarge such buildings. The tender of Plascom, Ltd., Wolverhampton, has been accepted for paving the carriageway of Wells-road with 2-in. old macadam mixed with Plascom for first layer, and 2-in. of new granite grouted with Plascom for the second layer, at 3s. 6d. per yard super. A plan has been passed for the erection of a billiard hall on the site of Nos. 150, 152, and 152A, King-street, for the Temperance Billiard Halls, Ltd.

Hanwell.—The Surveyor has been instructed to prepare estimates for the wood-paving of the margins of Uxbridge-road, from Boston-road to Church-road. Instructions have been given to the Surveyor to prepare plans and estimates for making-up Cowper-road.

Hendon.—Tenders are to be invited by the Rural District Council for the construction of an observation ward at the Isolation Hospital. The following plans have been passed:—Mr. W. Chemsgrove, fifteen houses, Bolton-road, Pinner; Mr. A. W. Marshall, five houses, West End-lane; Mr. H. R. Matthews, garage,

The Broadway, Harrow Weald; Mr. R. Murray, offices and transformer-room, Manor-road, Edgware, for the North Metropolitan Electric Light Company. Plans have been lodged by Messrs. C. & E. Steele for five houses, Longley-road, Pinner.

Heston and Isleworth.—The following plans have been passed:—Messrs. Fuller, Smith, & Turner, alterations to Cross Lances, Hounslow, and to the Swan, Isleworth; Mr. W. H. Ansell, additions to Wavertree, St. Peter's-road, St. Margaret's; Messrs. Nowell Parr & Kates, alterations to Lord Clyde and Duke of Cambridge, Hounslow, the Victoria Tavern and Red Lion, Isleworth, and the Jolly Farmer, Hounslow. Messrs. Smee & Houchin have lodged a plan for a chapel in Staines-road, Hounslow.

Holborn.—The Council have agreed to the application of Mr. J. Sawyer, on behalf of Messrs. A. W. Gamage, Ltd., for permission to extend the existing subway under Robin Hood-yard. The Borough Surveyor has been instructed, owing to a subsidence of the roadway in Danmark-street, to report as to the necessity of relaying the whole of the roadway.

Ilford.—Workshops are to be erected at the electricity station at a cost of 375*l.* The following plans have been passed:—Messrs. J. D. & S. J. Mould, hall, Richmond-road; Mr. E. T. Dunn for Mrs. Stroud, twenty-four houses, Farnham-road; Mr. A. T. Haines, for Mr. C. G. Rooke, four houses, Bradford-road; Mr. G. Smith, five houses, Brook-road; Mr. J. Derrett, four houses, Abbey-road.

Middlesex.—Land situated in the Edgware-road adjacent to the Silk Bridge over the Silk Stream arm of the Brent reservoir is to be purchased from the Ecclesiastical Commissioners by the County Council for 600*l.*, as the site for the new court-house, Hendon. A site in Mayfield-road, Stroud Green, is also to be purchased from the Hornsey Town Council for 8,222*l.*, for the erection of the Stroud Green High School for Girls.

Poplar.—Improvements are to be made to the public electric lighting of the Borough, and all gas lamps are to be replaced with incandescent electric lamps as soon as practicable after mains have been extended to those thoroughfares where only gas is now available. In connexion with the extension of the generating-station buildings, the Surveyor is to carry out excavations for, and the construction of, foundations in connexion therewith, at an estimated cost of 2,726*l.* Tenders are to be invited for the erection of the superstructure, the Borough Surveyor being allowed to compete.

St. Pancras.—The tender of the London Asphalte Company, Ltd., has been accepted for relaying part of the west side of Brunswick-square with 2-in. asphalt at 8s. per yard super. and free maintenance for two years, and thereafter at 6d. per yard super. per annum for maintenance for ten years.

Southwark.—In connexion with the widening of Halpin-place, 1,200 ft. of super. ft. of land had been given up to the public, and the Council have decided to pave this, including the resetting of the kerb, laying new footway paving and completing the asphalting of the street throughout, at an estimated cost of 137*l.* A deputation has been appointed to wait upon the Public Control Committee of the London County Council to put before them the question as to the necessity of erecting a new mortuary and coroner's court to replace the one situated at Collier's-rents, which is of faulty construction and too small for present requirements.

Stepney.—Electricity mains are to be extended to Parnham-street, Limehouse; Skidmore-street, Mile End Old Town; and Pennington-street, St. George-in-the-East. The Borough Engineer has been instructed to carry out the work of reconstructing the existing sewer in Diggon-street, Mile End Old Town, at an estimated cost of 140*l.*

Wandsworth.—Tenders are to be invited for paving the following new streets:—Cotefordstreet, Tooting, between Okeburn-road and Church-lane; Valley-road, Streatham, between Sunnyhill-road and entrance to Messrs. Curtis Brothers' dairy. Plans have been passed for Mr. M. W. Hudson for additions to Price's Bakery, Garratt-lane, Springfield; also for Mr. F. J. Meech for four houses in Chillerton-road.

Watford.—The Rural District Council has accepted the tender of Messrs. King & Son, at 120*l.*, for sewer construction work.

OBITUARY.

Mr. J. L. Clemence, J.P.

It is with regret that we record the death of Mr. John Louth Clemence, J.P., F.R.I.B.A., who has just passed away at his residence, 14, Marine-parade, Lowestoft. Mr. Clemence, who was eighty-nine on August 29 last, commenced his work very early in life — at fourteen years of age. He was first with Professor C. R. Cockerell, and worked with him in his office at the Bank of England. Later on he joined Sir Morton Peto, and had a large share in his schemes for laying out and developing Lowestoft. He planned practically the whole of that part of Lowestoft, says the *Lowestoft Journal*, which comprehends the Esplanade, Wellington-esplanade, and Marine-parade, and later on he was responsible for the most important buildings that were erected. Chief amongst these is St. John's Church, the Wesleyan Chapel in High-street, and the Town Hall as it stood before being improved and enlarged some years ago. He superintended the restoration of St. Margaret's Church in 1871. He was also architect for Lowestoft Hospital. Some of the pupils of the deceased were Sir J. Wolfe Barry, K.C.B. (engineer of the Tower Bridge), Edward Barry, the late Mr. Boardman, architect, of Norwich, and Mr. S. F. Pells. Mr. Clemence was a captain in the old 17th Suffolk Volunteers. He took a lively interest in the public affairs of Lowestoft. He was a member of the old Improvement Commission, and later on he became an Alderman of the Town Council, a position he held till 1894. He served the office of Mayor in 1886-1887. During the time Mr. Clemence was on the Town Council he did valuable work for the borough, and he was a keen critic of all that went on around him. When he retired from the Council in 1894 he continued to still act the part of critic, with a ready wit, and an aptitude for verse-making. Mr. Clemence married, but his wife predeceased him some years ago. The funeral was attended by the Mayor (Mr. T. E. Thirtle), members of the Corporation and of the magistracy.

Mr. George Wise.

We regret to announce the death of Mr. George Wise, who was found dead in his office-chair at Billingsgate Market on the evening of October 25. At the subsequent inquest held by Dr. Waldo, the City Coroner, it was found that death was due to heart failure. Mr. Wise was recently engaged as Clerk of Works for the Corporation of the City of London upon works at the Guildhall, Billingsgate Market, and Leadenhall Market, under Mr. Sydney Perks, the City Surveyor. He supervised the erection of the Leicestershire and Rutland County Asylum, under Messrs. Everard & Pick; the Kent County Asylum, Chatham, for Messrs. John Giles & Gough; and, under Mr. George T. Hine, the Claybury and Bexley Asylums, for the London County Council; and the East Sussex Asylum. He was one of the oldest members of the Incorporated Society of Clerks of Works, and throughout a long career was much esteemed and respected by his employers and by all who had business relations with him.

TRADE CATALOGUE.

Messrs. Teuten & Co., Ltd., iron founders, of 221, Upper Thames-street, London, E.C., forward us their latest illustrated supplementary catalogue and price list of new designs in mantel registers, ranges, baths, sinks, etc. The "Ideal" portable copper and the "Popular" washhouse boiler (for gas) are useful specialities which should find a ready market. Messrs. Teuten also supply ornamental cast and wrought work for verandahs, external stairs, and builders' ironmongery of every kind.

PATENTS.

APPLICATIONS PUBLISHED.*

17,093 of 1910.—Owen Jones Owen: Utilisation of slate refuse and manufacture of artificial slates or tiles therefrom.

22,873 of 1910.—Christopher Richard Ford: Fanlight openers and the like.

23,754 of 1910.—Charles Leslie Newland: Flushing cisterns.

30,215 of 1910.—Davy Brothers, Ltd., and Thomas Edmund Holmes: Overload relief apparatus for cranes.

1,088 of 1911.—William Smith Duggan: Back-draught-preventing chimney-pot and ventilator.

1,174 of 1911.—James Damrel Prior: Domestic firegrates.

4,284 of 1911.—Charles Minot March: Sliding and swinging windows.

12,113 of 1911.—Francis Feyens and Armand van de Poel: Pneumatic or like hammers.

12,562 of 1911.—Arthur Edward Towell: Flushing cisterns.

12,889 of 1911.—Otto Wenzel: Bucket elevating mechanism.

15,013 of 1911.—Emil Abraham Kling: Portable derricks.

*** All these applications are in the stage in which opposition to the grant of Patents upon them can be made.**

SOME RECENT SALES OF PROPERTY:

ESTATE EXCHANGE REPORT.

October 19.—By T. P. & A. Saul.

Morton, Lincs.—Agricultural estate, 1,267 acres, f. £47,985

By Edward Walker.

Snainton, Yorks.—Cliffe Farm, 104 a. 1 r. 4 p., f. 3,922

By Chesshire, Gibson, & Co.

Queslett, Cheshire.—Great Barr Hall and 682 acres, f. 34,835

October 20.—Alfred Mansell & Co.

Llandrinio, Montgomery.—Tre-Derwen Farm, 79 a. 1 r. 1 p., f. 3,050

Alderbury, Montgomery.—Enclosures of pasture, 22 a. 1 r. 13 p., f. 690

October 23.—By Alex. Robinson.

Camberwell.—210, Camberwell-rd. (s.), u.t. 50 yrs., g.r. 7*l.* 10s., p. 155

By Winterton & Sons.

Nuneaton, Warwick.—Flour mills, f. 4,250

By Bradshaw, Brown, & Co.

Stratford.—18 and 20, Hatfield-rd., f., w.r. 41*l.* 12s. 285

81 and 83, Chatsworth-rd., f., w.r. 46*l.* 16s. 320

Leytonstone.—83, 87, and 89, Fairlop-rd., u.t 76 yrs., g.r. 15*l.*, y.r. 94*l.* 700

Forest Gate.—31 and 33, Stork-rd., u.t. 69 yrs., g.r. 10*l.* 10s., w.r. 49*l.* 8s. 180

Stratford.—113 and 115, Ham Park-rd., u.t. 69 yrs, g r. 12*l.* 12s., w.r. 66*l.* 6s. 220

74, 78 to 88 (even), Warwick-rd., u.t. 69 yrs., g.r. 38*l.* 10s., w.r. 213*l.* 17s. 750

By Debenham, Tewson, Richardson, & Co.

Tooting.—162 and 164, Mitcham-rd., f., p. 2,740

89 and 91, Bickersteth-rd., f., w.r. 28*l.* 12s. ... 230

By Linnett, Lane, & Bettridge.

Willesden.—1 and 2, Haines Cottages, f., w.r. 31*l.* 4s. 155

By S. & G. Kingston.

Pinchbeck, Lincs.—Nunnerly Farm and arable land, 424 a. 3 r. 20 p., f. 20,000

Crowtree Farm, 38 a. 2 r. 28 p., f. 3,550

Arable land, 99 a. 2 r. 37 p., f. 5,340

Moulton, Lincs.—Pasture land, 8 a. 2 r. 25 p., f. 755

By John Hollingsworth.

Fulham.—24, Chesilton-rd., u.t. 69 yrs., g.r. 8*l.*, e.r. 40*l.* 290

October 25.—By Donaldson & Sons.

Dalston.—94 to 106 (even), Shrubland-gr., u.t. 38 yrs., g.r. 31*l.* 5s., y.r. 231*l.* 1,350

Wandsworth.—Westbury-st., f.g.r. 20*l.*, reversion in 53 yrs. 380

By Harold Griffin.

Battersea.—15, Tipthorpe-rd. and i.g.r. 4*l.* 2s. 6d., u.t. 54 yrs., g.r. 8*l.* 5s., w.r. 33*l.* 16s. 200

By Lambert & Symes.

Brenchley, Kent.—Moatlands Estate, 260 acres, f. 12,955

By Rushworth & Brown.

Gravesend, Kent.—120, Old-rd. West, f., y.r. 24*l.* 330

Pimlico.—52, Denbigh-st., u.t. 18½ yrs., g.r. 10*l.*, p. 290

By Robert Tidey & Son.

Caledonian-rd.—214, 220 and 222, Copenhagen-st., u.t. 43 yrs., g.r. 18*l.*, y.r. 115*l.*, 16s. 570

7, Carlsbad-st., u.t. 30 yrs., g.r. 4*l.*, w.r. 37*l.* 14s. 100

1, 2, and 3, Offord-st., u.t. 27 yrs., g.r. 9*l.*, y.r. 75*l.* 12s. 330

99, Roman-rd., u.t. 48 yrs., g.r. 8*l.*, y.r. 45*l.* ... 235

27, Dennis-st., and 36, Carlsbad-st., u.t. 30 yrs., g.r. 6*l.*, y. and w.r. 67*l.* 4s. 230

High Barnet.—Bedford-av., Radcot, and Westbourne, f., y.r. 80*l.* 920

By J. Anthony Trythall.

Beckenham.—69, Kent House-rd. (s.), u.t. 56 yrs., g.r. 9*l.*, y.r. 30*l.* 375

By Douglas Young & Co.

Tottenham Court-rd.—59, Whitfield-st., f., y.r. 56*l.* 1,080

Kennington.—7 and 9, Rutley-gdns., u.t. 56½ yrs., g.r. 12*l.* 12s., y.r. 66*l.* 500

By Thornborrow & Co.

Ravenstonedale, Westmorland.—Farms, etc., 743 acres, f. 26,700

By Henry Hendricks & Co.

Birmingham, Warwick.—26 and 27, Great Lister-st., u.t. 20 yrs., g.r. 6*l.* 8s, y.r. 62*l.* ... 180

Edgbaston, Warwick.—46, 48, 66, and 68, Gillott-rd., u.t. 80 yrs., g.r. 17*l.* 1s., y.r. 114*l.* 1,295

October 26.—By Chas. Caney.

Peckham.—18, Edith-rd., u.t. 53 yrs., g.r. 7*l.*, e.r. 40*l.* 220

By Wm. Clarkson.

Dulwich.—4, Park-rd, f., p. 675

By Frank Jolly & James.

Brixton.—25 and 27, Raeburn-st., u.t. 63 yrs., g.r. 13*l.*, w.r. 109*l.* 4s. 440

Hackney.—32, Christie-rd., u.t. 33 yrs., g.r. 4*l.* 10s., y.r. 26*l.* 180

By C. C. & T. Moore.

East Ham.—60 to 72 (even), Goldsmith-av., f., w.r. 200*l.* 4s. 1,400

Stepney.—56, 58, and 60, Umberston-st. (s.), f., y.r. 40*l.* 450

By Newbon & Shepherds.

Bowes Park.—8 to 16 (even), Russell-rd., u.t. 67 yrs., g.r. 24*l.*, w.r. 148*l.* 10s. 500

Holloway.—12, Citizen-rd., u.t. 31 yrs., g.r. 6*l.*, p. 110

21, Wedmore-gdns., u.t. 69 yrs., g.r. 6*l.*, y.r. 30*l.* 170

Canonbury.—17, Marquess-rd., u.t. 34 yrs., g.r. 10*l.*, p. 295

Holloway.—81, Parkhurst-rd., u.t. 11 yrs., g.r. 8*l.* 8s., y.r. 50*l.* 155

By Stimson & Sons.

Tooting.—57 and 59, Moffatt-rd., f., w.r. 36*l.* 8s. 410

74 and 76, Defoe-rd., u.t. 55 yrs., g.r. 7*l.*, w.r. 55*l.* 18s. 405

Merton.—171 to 179 (odd), High-st., u.t. 25 yrs., g.r. 6*l.* 10s., w.r. 101*l.* 8s. 500

Brixton.—9, Helix-rd., u.t. 78 yrs., g.r. 7*l.*, y.r. 40*l.* 330

RECENT SALES—*Continued on page 524.*

List of Competitions, Contracts, etc.

For some Contracts still open, but not included in this List, see previous issues. Those with an asterisk (*) are advertised in this Number: Competitions, iv.; Contracts, iv. vi. viii. x.; Public Appointments xvii.; Auction Sales, xxiv.

Certain conditions beyond those given in the following information are imposed in some cases, such as: the advertisers do not bind themselves to accept the lowest or any tender; that a fair wages clause shall be observed; that no allowance will be made for tenders; and that deposits are returned on receipt of a bona-fide tender unless stated to the contrary.

The date given at the commencement of each paragraph is the latest date when the tender, or the names of those willing to submit tenders, may be sent in.

***** It must be understood that the following paragraphs are printed as news, and not as advertisement; and that while every endeavour is made to ensure accuracy, we cannot be responsible for errors that *may* occur.**

Competitions.

NOVEMBER 6. — **Jordanhill, Glasgow.** — PROPOSED TRAINING COLLEGE.—See Competition News, page 508.

NOVEMBER 6. — **Stockport.** — NEW MENTAL WARDS.—The Stockport Guardians invite competitive designs for new buildings for mental patients at Infirmary, Stepping-hill, near Stockport. Three premiums are offered. See advertisement in issue of October 27 for further particulars.

NOVEMBER 17.—**Nottingham.**—BAPTIST CHURCH AND PREMISES.—Limited to Nottingham architects. Assessor, Mr. H. W. Wills, A.R.I.B.A. Particulars from Messrs. Rorke & Jackson, solicitors, King-street, Nottingham.

NOVEMBER 30.—**Cardiff.**—TECHNICAL INSTITUTE.—The Cardiff Education Committee invite designs and estimates for a technical institute. See advertisement in issue of August 18 for further particulars. Successful architect to carry out work. Premiums of 125*l.*, 75*l.*, and 50*l.* to other competitors. Mr. J. S. Gibson, assessor.

NOVEMBER 30. — **Hastings.** — EAST SUSSEX HOSPITAL.—The Joint Committee of the East Sussex Hospital and King Edward VII. Memorial Funds invite designs for new hospital. See advertisement in issue of August 25 for further particulars. Premiums of 125*l.*, 75*l.*, and 50*l.* Mr E. T. Hall, assessor.

DECEMBER 15.—**Sofia.**—NEW MUNICIPAL BUILDING.—See Competition News, page 508.

DECEMBER 29. — **Glasgow.** — DESIGN FOR A BRIDGE.—Designs are invited (Alexander Thomson Travelling Studentship) for a bridge. Premiums of 60*l.* and 20*l.* are offered. See advertisement in issue of December 24 for further particulars.

DECEMBER 30.—**Welsh Eisteddfod, 1912.**—DESIGNS FOR WORKMEN'S DWELLINGS.—Prize, 50*l.* Particulars from Welsh Housing Association, 9, Temple-chambers, E.C.

JANUARY 1, 1912. — **Rochdale Infirmary.**—EXTENSIONS.—Limited to Rochdale architects. Assessor, Mr. Alex. Graham, F.R.I.B.A.

JANUARY 29, 1912.—**Montevideo.**—Government palace (premiums, 2,125*l.* and 850*l.*) and town improvement scheme (premiums, 1,060*l.*, 640*l.*, and 425*l.*). Conditions may be seen at the Board of Trade, 73, Basinghall-street, E.C.

JANUARY 31, 1912. — **Australia.** — DESIGNS FOR FEDERAL CAPITAL CITY.—The Government of the Commonwealth of Australia invite competitive designs for the laying out of this Federal capital city. See advertisement in issue of September 1 for further particulars. See also page 508.

JULY 1, 1912.—**Dusseldorf.**—A plan for the extension of the City of Dusseldorf. Premiums of 1,000*l.* to 375*l.* Conditions on application to the Chief Burgomaster, Dusseldorf.

No DATE.—**Armadale.**—Public hall and offices, to cost 2,500*l.* Premiums of 15*l.* and 10*l.* Particulars from the Town Clerk, Armadale.

No DATE.—**Bolton.**—Miners' Federation Hall and Offices. Limited to architects within twenty-five miles of Bolton. Premiums, 50*l.* and 25*l.* Assessor, Mr. Jonathan Simpson, F.R.I.B.A. Particulars from Messrs. Fielding & Fernihough, Fold-street, Bolton.

* No DATE.—**Stafford.**—PUBLIC LIBRARY.—The Stafford Corporation invite designs for a Public Library. See advertisement in this issue for further particulars.

Contracts.

BUILDING.

The date given at the commencement of each paragraph is the latest date when the tender, or the names of those willing to submit tenders, may be sent in.

NOVEMBER 4.—**Connor Downs.**—BUILDINGS.—Erection of farm buildings at a farm at Connor Downs. Plan and specification from Mr. Sampson Hill, architect, Green-lane, Redruth.

NOVEMBER 6. — **Banbury.**—SHELTER.—Erection of a vagrants' shelter at the Union Workhouse. Plan and specification with the architect, Mr. J. Timms, of 48, Parson's-street, Banbury.

NOVEMBER 6. — **Dewsbury.**—VILLAS.—Erection of a pair of semi-detached villas. Plans and specifications with Messrs. Bickers & Co., Ltd., furnishers, Dewsbury.

NOVEMBER 6. — **Fraserburgh.**—ALTERATIONS.—For alterations to Rathen Public School. Plans with Mr. W. E. Gauld, A.R.I.B.A., architect, Saltoun-chambers, Fraserburgh.

NOVEMBER 7. — **Bridlington.** — RESIDENCES.—Erection of a pair of residences, situate the Marine-drive. Plans, specification, and conditions of contract from Mr. Maurice B. Parkin, architect and surveyor, Midway-avenue, Bridlington.

NOVEMBER 7. — **Chiswick.**—SCHOOL.—Erection of a boys' school, Strand-on-the-Green. Plans and specification, and quantities by Messrs. Northcroft, Neighbour, & Nicholson, from Mr. E. Willis, F.S.I., Surveyor of the Council, Town Hall, Chiswick, on deposit of 5*l.*

NOVEMBER 7.—**Thornaby-on-Tees.**—ADDITIONS.—Erection of new classrooms, manual instruction room, and other additions to the Arthur Head Schools. Quantities from Messrs. Clark & Moscrop, FF.R.I.B.A., architects, 10, Albert-road, Middlesbrough.

NOVEMBER 8. — **Stoke-upon-Trent.**—REPAIRS, ETC. — Repairs, alterations, painting, and decorating at the Union Offices and Relief Offices, High-street. Specifications and conditions from the architect, Union Offices, Stoke-on-Trent.

NOVEMBER 9.—**Whickham.**—MORTUARY, ETC.—Erection of conveniences and mortuary at Dunston and underground conveniences at Whickham. Specifications and quantities, on deposit of 1*l.* 1s., from the Council's Surveyor, Mr. J. B. Renton, Council Offices, Whickham.

NOVEMBER 9. — **Whitehaven.**—REPAIRS, ETC.—For alterations and repairs at 70 and 71, Peter-street. Specifications and particulars from Mr. Jacob Glaister, High Church-street, Whitehaven.

NOVEMBER 10.—**Bournemouth.**—CLIFF PROTECTION.—For the cliff protection at Alum Chine and other works in connexion therewith. Particulars and forms of tender from Mr. F. W. Lacey, M.Inst.C.E., Borough Engineer, Municipal Offices, Bournemouth. Deposit of 1*l.* 1s.

NOVEMBER 10. — **Bournemouth.** — SCHOOLS.—Erection of elementary schools, Cranleigh-road. Form of tender and plans with the Borough Engineer, Municipal Buildings, Bournemouth. Deposit of 1*l.* 1s.

NOVEMBER 10.—**Churwell.**—TANNERY.—For the extension of tannery and tan pits, extension of warehouse, lime pits, etc., at Millshaw Leather Works. Plans and specifications seen, and quantities from Mr. T. A. Buttery, Lic.R.I.B.A., architect, Queen-street, Morley, and 1, Basinghall-square, Leeds.

* NOVEMBER 10.—**Stanwell.**—ISOLATION HOSPITAL.—The Staines Joint Hospital Committee invite tenders for Isolation Hospital for Infectious Diseases at Stanwell, Middlesex. See advertisement in this issue for further particulars.

NOVEMBER 11. — **Norbury.**—SCHOOL.—Erection of a public elementary school at Stanford-road. Drawings by Mr. H. Carter Pegg, F.R.I.B.A., of Thornton Heath. Quantities and forms of tender, on deposit of 1*l.* 1s., from Mr. James Smyth, Clerk to the Committee, Education Office, Katharine-street, Croydon.

* NOVEMBER 11 — **Staffordshire.** — ENLARGEMENT OF SCHOOL. — The Staffordshire Education Committee invite tenders for the enlargement of Walsall Wood Council school. See advertisement in this issue for further particulars.

NOVEMBER 14.—**Haverfordwest.**—POST-OFFICE.—For extension of Haverfordwest Post-office. Drawings, specification, and conditions with Postmaster at Haverfordwest. Quantities and forms of tender from H.M. Office of Works, etc., Storey's-gate, S.W., on deposit of 1*l.* 1s.

NOVEMBER 14. — **Hindley.** — EXTENSIONS.—For hospital extensions, Sandy-lane. Particulars from the Surveyor, Mr. Oswald P. Abbott, Council Offices.

NOVEMBER 14. — **Shipton Bellinger.**—SCHOOL.—Erection of a Council school and teacher's house. Plans and specification seen, and quantities from Mr. A. L. Roberts, Architect to the Education Committee, The Castle, Winchester. Deposit of 2*l.* 2s.

NOVEMBER 16. — **Isleworth.** — IMPROVEMENTS, ETC.—For alterations and improvements at the Isleworth Public Hall. Plan and specification seen, and form of tender at the office of the Surveyor to the Council, Council House, Hounslow.

* NOVEMBER 16.—**London, N.**—BAKEHOUSE.—The St. Mary, Islington, Guardians invite tenders for new bakehouse at Workhouse, Cornwallis-road, N. See advertisement in this issue for further particulars.

NOVEMBER 18. — **Chipping Sodbury.**—SCHOOL.—For carrying out alterations and additions to the Grammar School premises. Particulars from Mr. R. S. Phillips, architect, Shire Hall, Gloucester. Deposit of 1*l.* 1s.

NOVEMBER 21. — **London.** — STEELWORK.—The Great Western Railway invite tenders for the renewal of a portion of the steel superstructure of the Smithfield Goods Station. Plans and specification seen, and forms of tender and quantities from the Engineer at Paddington Station, London.

NOVEMBER 21. — **Troedyrhiw.**—SCHOOL.—Erection of new girls' school at Troedyrhiw, Merthyr Tydfil. Names to the Deputy-Surveyor, Town Hall, Merthyr Tydfil.

NOVEMBER 23.—**Bexhill.**—SCHOOL.—Erection of an infants' school. Drawings by Mr. H. P. Burke-Downing, F.R.I.B.A., architect, 12, Little College-street, Westminster Abbey, S.W. Plans and schedule with the quantity surveyors, Messrs. John Leaning & Sons, F.S.I., of 28, John-street, Bedford-row, W.C. Deposit of 2*l.* 2s.

* NOVEMBER 23.—**Watford.**—ADDITIONS, ETC.—The Herts C.C. Education Committee invite tenders for alterations and additions to existing Grammar School for Boys at Derby-road, Watford. See advertisement in this issue for further particulars.

NOVEMBER 25.—**Nelson.**—CONVENIENCES.—Erection of sanitary conveniences in Vine-street. Plans and specifications seen, and quantities and forms of tender from Mr. W. Shackleton, A.M.Inst.C.E., Borough Engineer and Surveyor, Town Hall, Nelson.

No DATE. — **Carleton.** — RESIDENCE.—Erection and completion of a new residence. Mr. W. J. Tennant, architect and surveyor, Pontefract.

No DATE. — **Collingham.**—VILLA.—Erection of villa. Quantities from Mr. Charles H. Brooke, architect, Cookridge-street, Leeds.

No DATE.—**Kendal.**—SHOP.—For converting a portion of 21, Stramongate, into shop premises. Plans seen, and quantities and specifications from Mr. Stephen Shaw, F.R.I.B.A., architect, 45, Highgate, Kendal.

* No DATE.—**London, E.**—RESTORATION.—Tenders invited for restoration of seventeen cottages, Maplin-road, Custom House East. See advertisement in this issue for further particulars.

No DATE. — **Ludgvan, Wales.**—WORKS.—For carrying out certain works to the church drawings and specification by Messrs. St. Aubyn & Wadling, of Lamb-building, Temple, London, E.C.

No DATE. — **Shrewsbury.**—SCHOOL.—For rebuilding and extending Wellington Prince's-street Council School. Mr. H. E. Wale, Secretary for Elementary Education, County Buildings, Shrewsbury.

No DATE. — **Walsall Wood.**—SCHOOL.—For the enlargement of Walsall Wood Council School. Quantities, on deposit of 1*l.* 1s., from Mr. Graham Balfour, Director of Education, County Education Offices, Stafford.

No DATE. — **Wheatley Hill.**—HOUSES.—Erection of two dwelling-houses at Wheatley Hill for the Sherburn Hill Co-operative Society, Ltd. Names to architect, Mr. J. Walton Taylor, F.R.I.B.A., St. John-street, Newcastle-upon-Tyne.

ENGINEERING, IRON, AND STEEL.

NOVEMBER 7. — **Salisbury.** — BRIDGE. — For building a bridge at East Grinstead; for making-up the levels to the bridge with chalk; for gravelling the bridge and approaches. Plans and specifications with the architects, Messrs. John Harding & Son, 58, High-street, Salisbury.

NOVEMBER 11. — **Accrington.**—SEWAGE WORKS.—Enlarging the existing septic tanks, the construction of storm-water and other sewers, sedimentation, and storm tanks, sludge well, pump-house, culverts, screening shed, bacteria beds, at the Sewage Works, Church. Plans seen, and quantities from Mr. William J. Newton, A.M.Inst.C.E., Engineer to the Board, Town Hall, Accrington. Deposit of 5*l.*

NOVEMBER 13. — **Lancaster.** — HEATING.—For warming installation at the Dallas-road elementary school. Specification from Mr. Arthur G. Bradshaw, Borough Surveyor, Town Hall, Lancaster. Deposit of 10s. 6d.

NOVEMBER 13. — **Stretford.**—MAINS, ETC.—For electric mains and accessories. Forms of tender and specification, on deposit of 2*l.* 2s., from Mr. Robert Rowland, A.M.Inst.E.E., Resident Engineer, Electricity Station, Stretford.

NOVEMBER 14. — **Isleworth.**—GAS-ENGINE.—For the supply and fixing of a gas-engine at Sewage Works, Wyke Green, Isleworth. Specification seen, and form of tender from Mr. Reginald Brown, A.M.Inst.C.E., F.S.I., etc., Engineer to the Council, Public Offices, Southall, Middlesex.

NOVEMBER 14. — **London.** — PLANT, ETC.—Erection of four sets of crushing rolls, screens, and elevators for crushing ¾-in. Thames ballast to 3-16ths-in. size; also for erection of two sets of sand-drying plant for drying sand obtained from river ballast. Specifications, drawings, form of tender, etc., from the Chief Officer of Tramways, London C.C., 62, Finsbury-pavement, E.C.

NOVEMBER 16. — **Newport, Mon.**—LIFT.—Erection of an automatic electric lift at Workhouse infirmary. Particulars from Mr. H. J. Griggs, A.R.I.B.A., architect, Metropolitan Bank-chambers, Newport, Mon.

ENGINEERING, etc.—*continued.*

The date given at the commencement of each paragraph is the latest date when the tender, or the names of those willing to submit tenders, may be sent in.

NOVEMBER 17.—**Reading.**—OPEN-AIR BATH.—Construction of a concrete bathing-place, with campsheathing, footbridges, buildings, galvanised-iron screen fences, and other works at Coley, Reading. Drawings, specification, and general conditions seen, and form of tender from Mr. John Bowen, A.M.Inst.C.E., Borough Engineer and Surveyor, Town Hall, Reading.

NOVEMBER 22.—**Swindon.**—ENGINE, ETC.—Erection of a 250-kw. Diesel oil-engine, generating set, accessories, switchgear, etc. Specification and form of tender from Mr. A. Dimmack, A.M.Inst.M.E., Electricity Works, Swindon, on deposit of 1*l.* 1s.

FURNITURE, PAINTING, MATERIALS, etc.

NOVEMBER 6. — **Chorley.** — DECORATING, ETC.—Alterations, furnishing, and decoration to Boardroom, etc., at the Union Workhouse. Specifications and drawings at the Union Offices, 14, High-street, Chorley. Mr. R. E. Aspden, Clerk to the Guardians.

NOVEMBER 6.—**Heywood.**—PAINTING, ETC.—For painting and decorating the technical school. Specification at the Education Office. Deposit of 1*l.* 1s. Mr. G. G. Bouchier, Town Clerk, Municipal Buildings, Heywood.

NOVEMBER 7.—**Macclesfield.**—PAINTNG.—For the internal painting and decorating of the recently erected private patients' villa. Specification, Clerk to the Asylum, County Asylum, Parkside, Macclesfield.

NOVEMBER 7.—**Selby.**—FLOORING.—For flooring over swimming bath at the Public Baths. Plans seen, and specifications and quantities from Mr. Bruce Gray, F.R.S.Edin., New-lane, Selby.

NOVEMBER 8.—**Redruth.**—PAINTING, ETC.—For internal decoration at the police-station. Mr. Albert E. Brookes, County Surveyor, Truro.

NOVEMBER 9.—**London.**—FITTINGS.—For supply of lavatory fittings to post-offices. Secretary, H.M. Office of Works, etc., Storey's-gate, London, S.W.

NOVEMBER 13.—**Birmingham.**—PAINTING.—For cleaning, painting, and decorating the interior of the Parish Offices, Edmund-street, Newhall-street, and Cornwall-street. Specifications seen, and particulars from Messrs. W. H. Ward, architects, Paradise-street, Birmingham.

✱ NOVEMBER 16. — **London.** — STORES. — The London General Omnibus Company, Ltd., invite tenders for supply of various stores during 1912. See advertisement in this issue for further particulars.

✱ NOVEMBER 18. — **London.** — STORES AND MATERIALS.—The Port of London Authority invite tenders for supplies of stores and materials during the twelve months ending December 31, 1912. See advertisement in this issue for further particulars.

NOVEMBER 21. — **Grimsby.** — PAINTING.—For painting and cleaning interior and exterior of Strand-street School. Specifications at the Education Offices. Mr. D. Chandler, Clerk, Education Offices, Grimsby.

NO DATE. — **Rotherham.**—PAINTING, ETC.—For painting, etc., of exterior and interior of the buildings at the Masbro' Cemetery. Borough Engineer, Town Hall, Rotherham.

ROADS, SANITARY AND WATER WORKS.

NOVEMBER 6. — **Hastings.** — SEWER.—For the laying of about 1,140 feet of 6-in. stoneware pipe sewer. Drawing and specification seen, and form of tender at the office of the Borough Engineer, Mr. P. H. Palmer, M.Inst.C.E., Town Hall, Hastings.

NOVEMBER 8 — **Erith.** — STREETS.—For private street works. Plans seen, and specifications and quantities from the Surveyor's Office, Bexley-road, Erith. Deposit of 1*l.*

NOVEMBER 8. — **Twickenham.** — STREET.—For sewering, forming, levelling, paving, channelling, metalling, and making good Northumberland-row. Plan and specification seen, and quantities from Mr. Fred W. Pearce, F.S.I., Surveyor to the Council, Town Hall, Twickenham. Deposit of 1*l.* 1s.

NOVEMBER 9. — **Cheadle.** — ROAD. — For the widening of a portion of the Stockport-road. Plans seen, and specification and quantities from Mr. E. Sykes, Council Surveyor, Council Offices, Cheadle, near Manchester.

✱ NOVEMBER 9.—**London.**—LAVATORY FITTINGS.—The Commissioners of H.M. Works and Public Buildings invite tenders for the supply of lavatory fittings to post-offices. See advertisement in this issue for further particulars.

NOVEMBER 10.—**Hale.**—ROAD.—For the making-up of Leigh-road. Plans and specifications seen, and quantities, on deposit of 1*l.* 1s., from the Council's Surveyor, Mr. T. Blagburn, Council Offices, Ashley-road, Hale, Cheshire.

NOVEMBER 13.—**Bromley.**—ROADS.—For sewering, levelling, paving, metalling, channelling, and making good the roads in the Parish of Orpington. Plans and sections seen, and specifications from the Council's Surveyor, Maulden House, Sidcup-hill, Sidcup, Kent. Deposit of 1*l.* 1s.

NOVEMBER 13.—**Ilford.**—ROAD.—For making-up Park-avenue. Plans and specification seen, and quantities, on deposit of 2*l.* 2s., from Mr. H. Shaw, M.Inst.C.E., Engineer and Surveyor to the Council, Town Hall, Ilford.

NOVEMBER 13.—**Ilford.**—ROAD.—For making-up Norman-road. Plans and specification seen, and quantities from Mr. H. Shaw, M.Inst.C.E., Engineer and Surveyor to the Council, Town Hall, Ilford. Deposit of 2*l.* 2s

NOVEMBER 14. — **Lewes.** — MATERIALS.—For supply of materials. Forms of tender from Mr. F. J. Wood, A.M.Inst.C.E., County Surveyor, County Hall, Lewes, Sussex.

NOVEMBER 14. — **New Malden.** — ROADS.—For various road works for the Maldens and Coombe Urban District Council. Drawings seen, and specifications and forms of tender from the Engineer and Surveyor, Mr. R. H. Jeffes, A.M.Inst.C.E., Council Offices, New Malden. Deposit of 3*l.* 3s.

NOVEMBER 14.—**Southall.**—PAVING, ETC.—For paving, etc., at Featherstone-road and Western-road. Plans and specifications seen, and quantities from Mr. R. Brown, A.M.Inst.C.E., F.S.I., Engineer and Surveyor, Public Offices, Southall.

NOVEMBER 14. — **Wellington.** — SEWER.—For construction of a 9-in. stoneware pipe sewer. Plans and particulars from the Council's Surveyor, Mr. George Riley, 14, Walker-street, Wellington, Salop.

NOVEMBER 16. — **Chelmsford.**—GRANITE, ETC.—For supply of about 1,000 tons of Guernsey granite and granite chippings. Forms of tender from the Borough Surveyor, 16, London-road, Chelmsford.

NOVEMBER 16. — **Wallington.** — ROAD.—For making-up Hall-road. Plans and specifications by the Council's Surveyor, Mr. R. M. Chart, F.S.I., Katharine-street, Croydon. Deposit of 1*l.*

NOVEMBER 16.—**Wombwell.**—SEWER.—For the relaying of about 300 lin. yds. of 12-in. cast-iron pipe sewer and about 480 lin. yds. of 12-in. stoneware pipe sewer, in Station-lane. Plans and specifications seen, and quantities, on deposit of 1*l.* 1s., from Mr. W. Quest, the Surveyor to the Council, Town Hall, Wombwell.

NOVEMBER 21.—**Acton.**—ROADS.—For making-up various roads. Plans and specifications with Mr. F. Sadler, Surveyor, Council Offices, Acton, W.

NOVEMBER 21. — **Goole.**—PAVING.—For paving back streets in Old Goole. Specifications and quantities from Mr. C. G. Bradley, C.E., Council Offices, Goole. Deposit of 1*l.* 1s.

NOVEMBER 21. — **London.**—STREET.—Construction of a new 70-ft. street, about 800 ft. long, being a diversion of Millbank-street, Westminster, S.W. Drawings and specifications, quantities, form of tender, etc., from the Chief Engineer of the Council, Mr. Maurice Fitzmaurice, C.M.G., at the County Hall, Spring-gardens, S.W. Deposit of 2*l.*

NOVEMBER 21. — **Scunthorpe.** — SEWER.—Construction of brick sewer and granite concrete sewer. Plans and specifications with the Engineer, Mr. Herbert Walker, M.Inst.C.E., King-street, Nottingham. Quantities on deposit of 5*l.*

NOVEMBER 22.—**Spilsby.**—SEWERAGE.—For construction of stoneware pipe sewers and construction of ejector chambers, tanks, filters, and erection of compressor house. Plans and specifications with the Engineer, Mr. Herbert Walker, M.Inst.C.E., King-street, Nottingham. Quantities on deposit of 5*l.*

NOVEMBER 23. — **Porthcawl.** — STREETS.—For private street improvement works. Plan and specification seen, and quantities and forms of tender from Mr. A. S. Lilley, A.M.Inst.M.C.E., Surveyor, Council Offices, Porthcawl. Deposit of 2*l.* 2s.

Public Appointments.

Nature of Appointment.	By whom Advertised.	Salary.	Application to be in
*CLERK OF WORKS	Todmorden Education Com...	3*l.* 3s. per week	Nov. 10
*ASSISTANT CRAFTSMASTER	Metropolitan Asylums Board	120*l.* per annum	Nov. 14

Auction Sales.

Nature and Place of Sale.	By whom Offered.	Date of Sale.
*DEALS, BATTENS, BOARDS, TIMBER, ETC.—Great Hall, Winchester House, E.C.	Churchill & Sim	Nov. 8
*STOCK-IN-TRADE OF TIMBER MERCHANT, SHOREDITCH—On the Premises	H W. Smith	Nov. 14
*FREEHOLD PROPERTY, CITY OF LONDON—At the Mart	Debenham, Tewson, Richardson, & Co.	Nov. 21
*FREEHOLD BUILDING SITE, CITY OF LONDON—At the Mart	Debenham, Tewson, Richardson, & Co.	Nov. 21
*FACTORY PREMISES, VAUXHALL BRIDGE-ROAD—At the Mart	Skelding & Holland	Nov. 23
*STOCK OF TIMBER—On the Premises	Skelding & Holland	Nov. 28
*FREEHOLD WORKS, TIMBER STORE, ETC.—On the Premises	Skelding & Holland	Nov. 28
*LAND FOR GARDEN SUBURBS, HEATON & SHIPLEY—Mechanics' Institute, Bradford	Tyler & Co.	Nov. 28
*FREEHOLD PROPERTY, OXFORD-STREET—At the Mart	E. Fox & Bousfield	Dec. 6

RECENT SALES—*Continued from page 522.*

Hammersmith.—71, Overstone-rd., u.t. 54 yrs., g.r. 7*l.* 7s., q.r. 48*l.*	£285
Camberwell.—26, Kitson-rd., u.t. 46 yrs., g.r. 6*l.* 10s., p.	150
Rotherhithe.—16, Cope-st. (s.), f., p.	180
Southwark.—Ralph-st., l.g. rents 30*l.*, u.t. 10 yrs., g.r. nil	155
By HENRY HENDRIKS & Co.	
Birmingham, Warwick.—Cambridge-st., f.g.r. 250*l.*, reversion in 49 yrs.	5,400

Contractions used in these lists.—F.g.r. for freehold ground-rent; l.g.r. for leasehold ground-rent; i.g.r. for improved ground-rent; g.r. for ground-rent; r. for rent; f. for freehold; c. for copyhold; l. for leasehold; p. for possession; e.r. for estimated rental; w.r. for weekly rental; q.r. for quarterly rental; y.r. for yearly rental; u.t. for unexpired term; p.a. for per annum; yrs. for years; la. for lane; st. for street; rd. for road; sq. for square; pl. for place; ter. for terrace; cres. for crescent; av. for avenue; gdns. for gardens; yd. for yard; gr. for grove; b.h. for beerhouse; p.h. for public-house; o. for offices; s. for shops; ct. for court.

TERMS OF SUBSCRIPTION.

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PRICES CURRENT OF MATERIALS.

✱,✱ Our aim in this list is to give, as far as possible, the *average* prices of materials, not necessarily the lowest. Quality and quantity obviously affect prices—a fact which should be remembered by those who make use of this information.

BRICKS, &c.

Per 1000 Alongside, in River.	£	s.	d.
Best Stocks	1	13	0
Picked Stocks for Facings	2	7	0

BRICKS, &c. (*Continued.*)

Per 1000, Delivered at Railway Depôt.

	£	s.	d.
Flettons	1	10	0
Best Fareham Red	3	12	0
Best Red Pressed Ruabon Facing	5	0	0
Best Blue Pressed Staffordshire	3	15	0
Do. Bullnose	4	0	0
Best Stourbridge Fire Bricks	4	0	0
GLAZED BRICKS.			
Best White and Ivory Glazed Stretchers	10	17	6
Headers	10	7	6
Quoins, Bull-nose, and Flats	14	7	6
D'ble Stretchers	16	7	6
Double Headers	13	7	6
One Side and two Ends	17	7	6
Two Sides and one End	18	7	6
Splays & Squints	15	17	6
Best Dipped Salt Glzd. Str'tch'rs	10	17	6
Headers	10	7	6
Quoins, Bullnose, and Flats	14	7	6
D'ble Stretchers	16	7	6
Double Headers	13	7	6
One Side and two Ends	17	7	6
Two Sides and one End	18	7	6
Splays & Squints	15	17	6

Second Quality White and Dipped Salt Glazed, £1 5s. per 1000 less than best.

BRICKS, &c. (*Continued*).

	s.	d.	
Thames and Pit Sand	6	9	per yard, delivered.
Thames Ballast	5	6	" "
Best Portland Cement	30	0	per ton, "
Best Ground Blue Lias Lime	19	0	" "

NOTE—The cement or lime is exclusive of the ordinary charge for sacks.

Grey Stone Lime ..... 13s. 0d. per yard delivered.
Stourbridge Fireclay in sacks 27s. 0d. per ton at rly dpt.

STONE.

Per Ft. Cube.

BATH STONE—delivered on road waggons,	s.	d.
Paddington Depôt	1	6½
Do. do. delivered on road waggons, Nine Elms Depôt	1	8½

PORTLAND STONE (20 ft. average)—

	s.	d.
Brown Whitbed, delivered on road waggons, Paddington Depôt, Nine Elms Depôt, or Pimlico Wharf	2	3
White Basebed, delivered on road waggons Paddington Depôt, Nine Elms Depôt, or Pimlico Wharf	2	4½

Per Ft. Cube, delivered at Railway Depôt.

	s.	d.		s.	d.
Ancaster in blocks..	1	10	Closeburn Red Freestone	2	0
Beer in blocks	1	6	Red Mansfield Freestone	2	4
Greenshill in blocks	1	10	Talacre & Gwespyr Stone	2	8
Darley Dale in blocks	2	4			
Red Corsehill in blocks	2	3			

YORK STONE—*Robin Hood Quality.*

Per Ft. Cube, Delivered at Railway Depôt.	s.	d.
Scappled random blocks	2	10
Per Ft. Super., Delivered at Railway Depôt.		
6 in. sawn two sides landings to sizes (under 40 ft. super.)	2	3
6 in. rubbed two sides ditto, ditto	2	6
3 in. sawn two sides slabs (random sizes)	0	11½
2 in. to 2½ in. sawn one side slabs (random sizes)	0	7
1½ in. to 2 in. ditto, ditto	0	6

HARD YORK—

Per Ft. Cube, Delivered at Railway Depôt.		
Scappled random blocks	3	0
Per Ft. Super., Delivered at Railway Depôt.		
6 in. sawn two sides landing to sizes (under 40 ft. super.)	2	8
6 in. rubbed two sides ditto	3	0
3 in. sawn two sides slabs (random sizes)	1	2
2 in. self-faced random flags	0	5

SLATES.

Per 1000 of 1200 at Railway Depôt.

In. In.	£	s.	d.	In. In.	£	s.	d.
20×10 best blue Bangor	13	2	6	20×10 best Eur'ka unfading green	15	17	6
20×12 ditto	13	17	6	20×12 ditto	18	7	6
20×10 1st quality ditto	13	0	0	18×10 ditto	13	5	0
20×12 ditto	13	15	0	16×8 ditto	10	5	0
16×8 ditto	7	5	0	20×10 permanent green	11	12	6
22×10 best blue Portmadoc	12	12	6	18×10 ditto	9	12	6
16×8 ditto	12	12	6	16×8 ditto	6	12	6

TILES.

At Railway Depôt.

	s.	d.		s.	d.
Best plain red roofing (per 1000)	42	0	Best "Hartshill" brand, plain sand-faced (per 1000)	50	0
Hip and Valley (per doz.)	3	7	Do. pressed (per 1000)	47	6
Best Broseley (per 1000)	50	0	Do. Ornamental (per 1000)	50	0
Do. Ornamental (per 1000)	52	6	Hip (per doz.)	4	0
Hip and Valley (per doz.)	4	0	Valley (per doz.)	3	6
Best Ruabon red, brown, or brindled (Edw'ds) (per 1000)	57	6	Staffords. (Hanley) Reds or Brindled (per 1000)	42	6
Do. Ornamental (per 1000)	60	0	Hand-made sand-faced (per 1000)	45	0
Hip (per doz.)	4	0	Hip (per doz.)	4	0
Valley (per doz.)	3	0	Valley (per doz.)	3	6

WOOD.

BUILDING WOOD.	At per standard.					
	£	s.	d.	£	s.	d.
Deals: best 3 in. by 11 in. and 4 in. by 9 in. and 11 in.	14	0	0	15	10	0
Deals: best 3 by 9	13	10	0	14	10	0
Battens: best 2½ in. by 7 in. and 8 in., and 3 in. by 7 in. and 8 in.	11	10	0	12	10	0
Battens: best 2½ by 6 and 3 by 6	0	10	0	less than 7 in. and 8 in.		
Deals: seconds	1	0	0	less than best.		
Battens: seconds	0	10	0	"	"	
2 in. by in. and 2 in. by 6 in.	9	10	0	10	10	0
2 in. by 4½ in. and 2 in. by 5 in.	9	0	0	10	0	0
Foreign Sawn Boards—						
1 in. and 1¼ in. by 7 in.	0	10	0	more than battens.		
¼ in.	1	0	0	"		
Fir timber: best middling Danzig or Memel (average specification)	At per load of 50 ft.					
Seconds	5	0	0	5	10	0
Small timber (8 in. to 10 in.)	4	10	0	5	0	0
Small timber (6 in. to 8 in.)	3	17	6	4	0	0
Swedish balks	3	5	0	3	10	0
Pitch-pine timber (30 ft. average)	2	12	6	3	0	0
	4	10	0	5	5	0

JOINERS' WOOD.	At per standard.					
	£	s.	d.	£	s.	d.
White Sea: first yellow deals, 3 in. by 11 in.	24	10	0	25	10	0
3 in. by 9 in.	22	10	0	23	10	0
Battens, 2½ in. and 3 in. by 7 in.	17	0	0	18	0	0
Second yellow deals, 3 in. by 11 in.	19	0	0	20	0	0
" " 3 in. by 9 in.	18	0	0	19	10	0
Battens, 2½ in. and 3 in. by 7 in.	14	0	0	15	0	0
Third yellow deals, 3 in. by 11 in. and 9 in.	14	0	0	15	0	0
Battens, 2½ in. and 3 in. by 7 in.	11	10	0	12	10	0

WOOD (*Continued*).

JOINERS' WOOD (*Continued*)—	At per standard.					
	£	s.	d.	£	s.	d.
Petersburg: first yellow deals, 3 in. by 11 in.	21	10	0	22	10	0
Do. 3 in. by 9 in.	18	10	0	19	10	0
Battens	14	0	0	15	0	0
Second yellow deals, 3 in. by 11 in	16	10	0	17	10	0
Do. 3 in. by 9 in.	15	0	0	16	0	0
Battens	11	10	0	12	10	0
Third yellow deals, 3in. by 11 in.	13	10	0	14	10	0
Do. 3 in. by 9 in.	13	0	0	14	0	0
Battens	10	10	0	11	0	0
White Sea and Petersburg—						
First white deals, 3 in. by 11 in.	15	0	0	16	0	0
" " 3 in. by 9 in.	14	0	0	14	10	0
Battens	11	10	0	12	10	0
Second white deals, 3in. by 11in.	14	0	0	15	0	0
" " 3 in. by 9 in.	13	0	0	14	0	0
Battens	10	10	0	11	0	0
Pitch-pine: deals	19	0	0	21	0	0
Under 2 in. thick extra	0	10	0	1	0	0
Yellow Pine—First, regular sizes	44	0	0	upwards.		
Oddments	32	0	0	"		
Seconds, regular sizes	33	0	0	"		
Oddments	28	0	0	"		
Kurai Pine—Planks per ft. cube.	0	3	6	0	5	0
Danzig and Stettin Oak Logs—						
Large, per ft. cube	0	3	0	0	3	9
Small " "	0	2	6	0	2	6
Wainscot Oak Logs, per ft. cube	0	5	6	0	6	0
Dry Wainscot Oak, per ft. sup. as inch	0	0	8½	0	0	9½
¼ in. do. do.	0	0	7	—		
Dry Mahogany—Houndras, Tabasco, per ft. super. as inch..	0	0	10	0	1	1
Selected, Figury, per ft. super. as inch	0	1	6	0	2	6
Dry Walnut, American, per ft. super. as inch	0	0	10	0	1	0
Teak, per load	18	0	0	22	0	0
American Whitewood planks, per ft. cube	0	4	0	0	5	0
Prepared Flooring, etc.—	Per square.					
1 in. by 7 in. yellow, planed and shot	0	13	6	0	17	0
1 in. by 7 in. yellow, planed and matched	0	14	0	0	18	0
1¼ in. by 7 in. yellow, planed and matched	0	16	0	1	0	0
1 in. by 7 in. white, planed and shot	0	12	0	0	14	6
1 in. by 7 in. white, planed and matched	0	12	6	0	15	0
1¼ in. by 7 in. white, planed and matched	0	15	0	0	16	6
¾ in. by 7 in. yellow, matched and beaded or V-jointed brds.	0	11	0	0	13	6
1 in. by 7 in. " "	0	14	0	0	18	6
¾ in. by 7 in. white " "	0	10	0	0	11	0
1 in. by 7 in. " "	0	12	9	0	15	0

6 in. at 6d. to 9d. per square less than 7 in.

JOISTS, GIRDERS, &c.

	In London, or delivered Railway Vans, per ton.					
	£	s.	d.	£	s.	d.
Rolled Steel Joists, ordinary sections	7	10	0	8	0	0
Compound Girders, ordinary sections	9	10	0	10	0	0
Steel Compound Stanchions	11	0	0	12	0	0
Angles, Tees, and Channels, ordinary sections	9	10	0	10	0	0
Flitch Plates	9	10	0	9	10	0
Cast Iron Columns & Stanchions, including ordinary patterns	7	10	0	8	10	0

METALS.

	Per ton, in London.					
IRON—	£	s.	d.	£	s.	d.
Common Bars	8	10	0	9	0	0
Staffordshire Crown Bars, good merchant quality	8	15	0	9	5	0
Staffordshire "Marked Bars"	10	10	0	—		
Mild Steel Bars	8	15	0	9	5	0
Hoop Iron, basis price	9	5	0	9	10	0
" " Galvanised	17	0	0	—		
(*And upwards, according to size and gauge.)						
Sheet Iron Black—						
Ordinary sizes to 20 g.	9	15	0	—		
" " 24 g.	10	15	0	—		
" " 26 g.	12	5	0	—		
Sheet Iron, Galvanised, flat, ordinary quality—						
Ordinary sizes, 6 ft. by 2 ft. to 3 ft. to 20 g.	15	0	0	—		
Ordinary sizes to 22 g. and 24 g.	15	10	0	—		
" " 26 g.	16	10	0	—		
Sheet Iron, Galvanised, flat, best quality—						
Ordinary sizes to 20 g.	18	0	0	—		
" " 22 g. and 24 g.	18	10	0	—		
" " 26 g.	20	0	0	—		
Galvanised Corrugated Sheets—						
Ordinary sizes, 6ft. to 8ft. 20 g.	14	10	0	—		
" " 22 g. and 24 g.	14	15	0	—		
" " 26 g.	16	5	0	—		
Best Soft Steel Sheets, 6 ft. by 2 ft. to 3 ft. to 20 g. and thicker	12	0	0	—		
Best Soft Steel Sheets, 2 g. & 24 g.	13	0	0	—		
" " " 26 g.	15	0	0	—		
Cut Nails, 3 in. to 6 in.	10	10	0	11	0	0
(Under 3 in., usual trade extras.)						

LEAD, &c.

	£	s.	d.	
LEAD—Sheet, English, 4lb. and up	19	5	0	—
Pipe in coils	19	15	0	—
Soil pipe	22	15	0	—
Compo pipe	22	15	0	—
ZINC—Sheet—	In casks of 10 cwt.			
Vielle Montagne	34	5	0	—
Silesian	33	15	0	—
Zinc, in bundles, 1s. per cwt. extra.				
COPPER—				
Strong Sheet per lb.	0	1	0	—
Thin " "	0	1	1	—
Copper nails "	0	0	10	—
Copper wire "	0	0	10	—
BRASS—				
Strong Sheet "	0	0	11	—
Thin "	0	1	0	—
TIN—English Ingots "	0	1	10	—
SOLDER—Plumbers' "	0	0	8½	—
Tinmen's "	0	0	11	—
Blowpipe "	0	1	2	—

ENGLISH SHEET GLASS IN CRATES OF STOCK SIZES.*

Per Ft., Delivered.

15 oz. thirds	2½d.	26 oz. fourths	3½d.
" fourths	1½d.	32 oz. thirds	3d.
21 oz. thirds	3d.	" fourths	4½d.
" fourths	2½d.	Fluted Sheet, 15 oz.	3½d.
26 oz. thirds	4d.	" 21 oz.	4½d.

ENGLISH ROLLED PLATE IN CRATES OF STOCK SIZES.*

Per Ft., Delivered.

⅛ Hartley's	2d.	Figured Rolled, Oxford Rolled, Oceanic, Arctic, Muffled, and Rolled Cathedral, white	3½d.
⅜ "	2½d.	Ditto, tinted	5d.
¼ "	2½d.		

Not less than three crates.

OILS, &c.		£	s.	d.
Raw Linseed Oil in pipes	per gallon	0	3	6
" " " in barrels	"	0	3	7
" " " in drums	"	0	3	9
Boiled " in barrels	"	0	3	9
" " " in drums	"	0	4	0
Turpentine in barrels	"	0	3	1
" in drums	"	0	3	3
Genuine Ground English White Lead, per ton		25	0	0
Red Lead, Dry	"	22	10	0
Best Linseed Oil Putty	per cwt.	0	11	0
Stockholm Tar	per barrel	1	12	0

VARNISHES, &c.	Per gallon. £	s.	d.
Fine Pale Oak Varnish	0	8	0
Pale Copal Oak	0	10	6
Superfine Pale Elastic Oak	0	12	6
Fine Extra Hard Church Oak	0	10	0
Superfine Hard-drying Oak, for seats of Churches	0	14	6
Fine Elastic Carriage	0	12	0
Superfine Pale Elastic Carriage	0	16	0
Fine Pale Maple	0	10	0
Finest Pale Durable Copal	0	18	0
Extra Pale French Oil	1	1	0
Eggshell Flating Varnish	0	18	0
White Pale Enamel	1	4	0
Extra Pale Paper	0	12	0
Best Japan Gold Size	0	10	6
Best Black Japan	0	16	0
Oak and Mahogany Stain	0	9	0
Brunswick Black	0	8	0
Berlin Black	0	16	0
Knotting	0	10	9
French and Brush Polish	0	10	6

TO CORRESPONDENTS.

NOTE.—All communications with respect to literary and artistic matters should be addressed to "THE EDITOR" (and not to any person by name); those relating to advertisements and other exclusively business matters should be addressed to "THE PUBLISHER," and *not* to the Editor.

All communications must be authenticated by the name and address of the sender, whether for publication or not. No notice can be taken of anonymous communications.

The responsibility of signed articles, letters, and papers read at meetings rests, of course, with the authors.

We cannot undertake to return rejected communications; and the Editor cannot be responsible for drawings, photographs, manuscripts, or other documents, or for models or samples, sent to or left at this office, unless he has specially asked for them.

All drawings sent to or left at this office for consideration should bear the owner's name and address on either the face or back of the drawing. Delay and inconvenience may result from inattention to this.

Any commission to a contributor to write an article, or to execute or lend a drawing for publication, is given subject to the approval of the article or drawing, when received, by the Editor, who retains the right to reject it if unsatisfactory. The receipt by the author of a proof of an article in type does not necessarily imply its acceptance.

N.B.—Illustrations of the First Premiated Design in any important architectural competition will always be accepted for publication by the Editor, whether they have been formally asked for or not.

TENDERS.

Communications for insertion under this heading should be addressed to "The Editor," and must reach us *not later than* 10 *a.m. on Thursday.* [N.B.—We cannot publish Tenders unless authenticated either by the architect or the building owner; and we cannot publish announcements of Tenders accepted unless the amount of the Tender is stated, nor any list in which the lowest Tender is under 100*l.* unless in some exceptional cases and for special reasons.]

Denotes *accepted. †Denotes *provisionally accepted.*

BRAUNTON.—For erection of two houses at East Hill. Mr. G. R. Folland, P.A.S.I.:—

W. Slee & Son	£1,039	W. H. Robins	£832
H. Slee & Son	970	J. Morrish & Son, Bishop's Lawton, North Devon*	816
E. Kerslake	960		
W. Hancock	920		

BRITON FERRY.—For construction of a brick and concrete sewer. Mr. H. A. Clarke, Engineer, Urban District Council Offices, Briton Ferry. Quantities by Engineer:—

W. H. Hill	£2,500 0 0	T. Walker	£2,147 11 6
W. Underwood & Bros., Ltd.	2,354 4 10	A. Collins & Co.	2,128 2 6
G. Morgan	2,326 16 9	E. R. Evans & Bros.	1,956 17 8
H. Jones	2,314 11 9	W. & J. R. Watson, Ltd., Bridgend*	1,836 2 6
J. W. Thompson	2,193 7 6	H. Smith	1,835 10 0
Barnes, Chaplin, & Co.	2,169 19 0		
Johnson Bros.	2,169 17 3		

[Engineer's estimate, £2,269.]

BROUGHTON PENTRE.—For erection of a semi-permanent school for 376 children. Mr. W. D. Wilcs, County Architect, 42A, High-street, Wrexham :—

For Permanent Works.

H. A. Jones	£1,448 0 0	R. Williams	£1,171 0 0
W. H. Thomas	1,390 0 0	W. H. Wycherley	1,165 0 0
Treasure & Co.	1,239 0 0	J. B. Woolley	1,050 8 6
Lewis Bros.	1,227 0 0	J. T. Jones, Cefn, Ruabon*	987 0 0
C. Griffiths	1,198 0 0		

For Superstructure.

T. Mundy	£3,221 0 0	Cowieson & Co.	£2,205 16 2
W. H. Wycherley	2,700 0 0	C. Griffiths	2,158 0 0
H. A. Jones	2,684 0 0	Treasure & Co.	2,157 0 0
Ginger, Lee, & Co.	2,646 18 0	J. B. Woolley	2,126 8 2
Humphreys, Ltd.	2,631 0 0	J. T. Jones	2,097 0 0
R. Williams	2,543 4 1	F. Smith & Co.	2,050 0 0
Lewis Bros.	2,490 5 0	W. Harbrow, South Bermondsey Station, London, S.E.*	2,049 0 0
W. H. Thomas	2,340 0 0		
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Estimated cost £1,800

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L. H. & R. Roberts	2,957 0 0
E. Lawrance & Sons, Ltd.	2,946 0 0
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J. Stewart	2,882 12 2
E. A. Roome & Co.	2,833 0 0
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G. Parker & Sons	15,602 0	T. D. Leng	14,246 0
Holliday & Greenwood, Ltd.	15,369 0	J. & M. Patrick	14,196 0
G. E. Wallis & Sons, Ltd.	15,242 0	J. & C. Bowyer, Ltd., Upper Norwood*	13,988 0
Kirk & Randall	14,948 0	J. Smith & Sons, Ltd.‡	13,892 0
W. Johnson & Co., Ltd.	14,906 0	W. Akers & Co., Ltd.‡	13,275 0
G. Godson & Sons	14,722 0		

‡ Withdrawn.

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A. Webb	265 0 0	C. J. Kemp*	236 0 0
W. J. Maddison	265 0 0		

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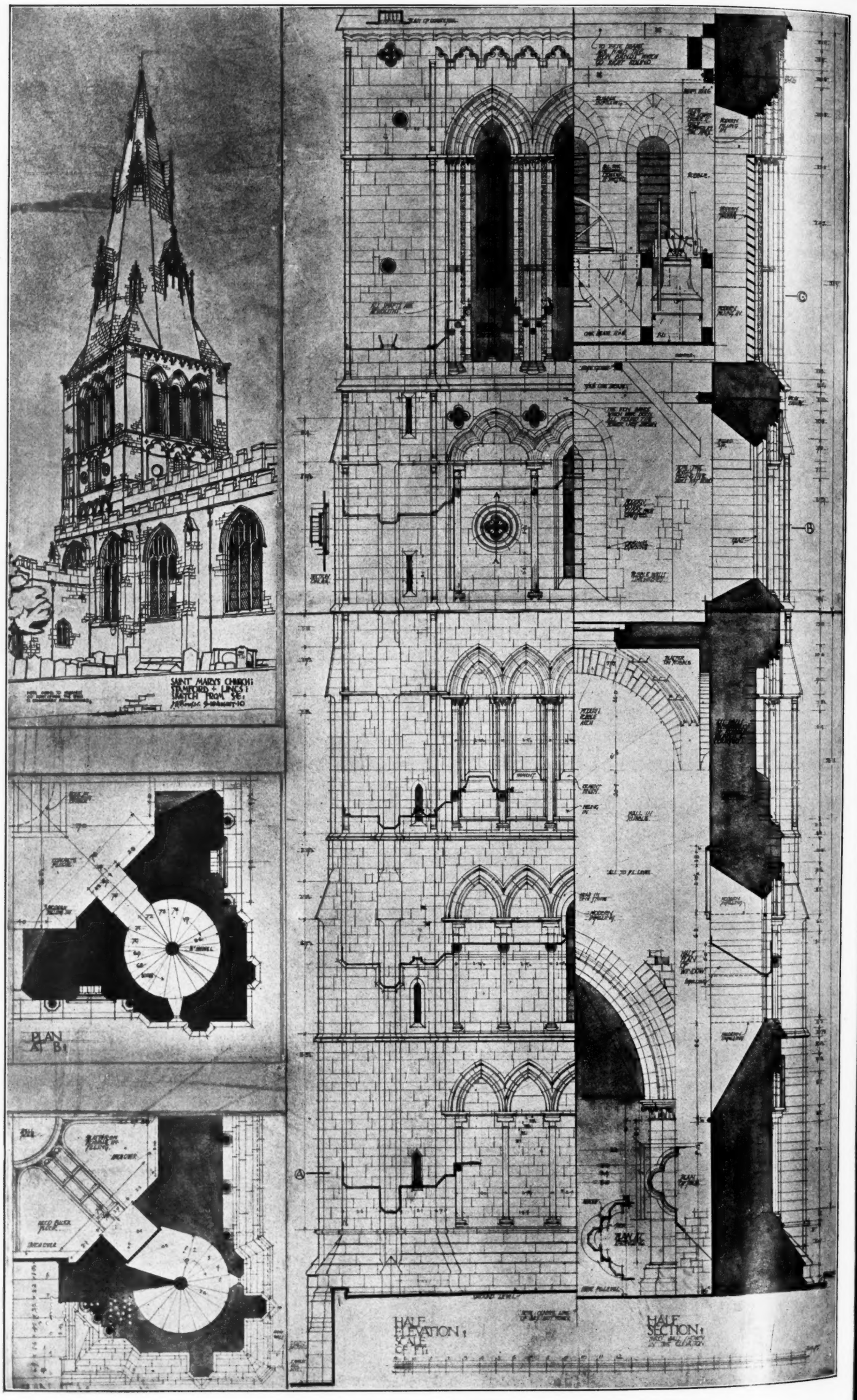

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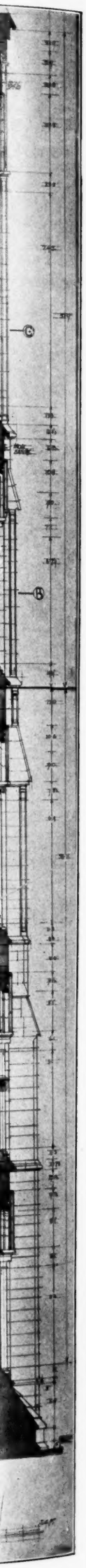

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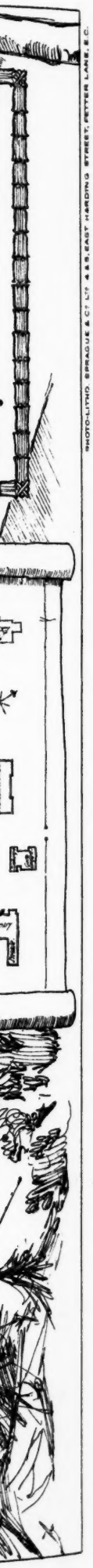
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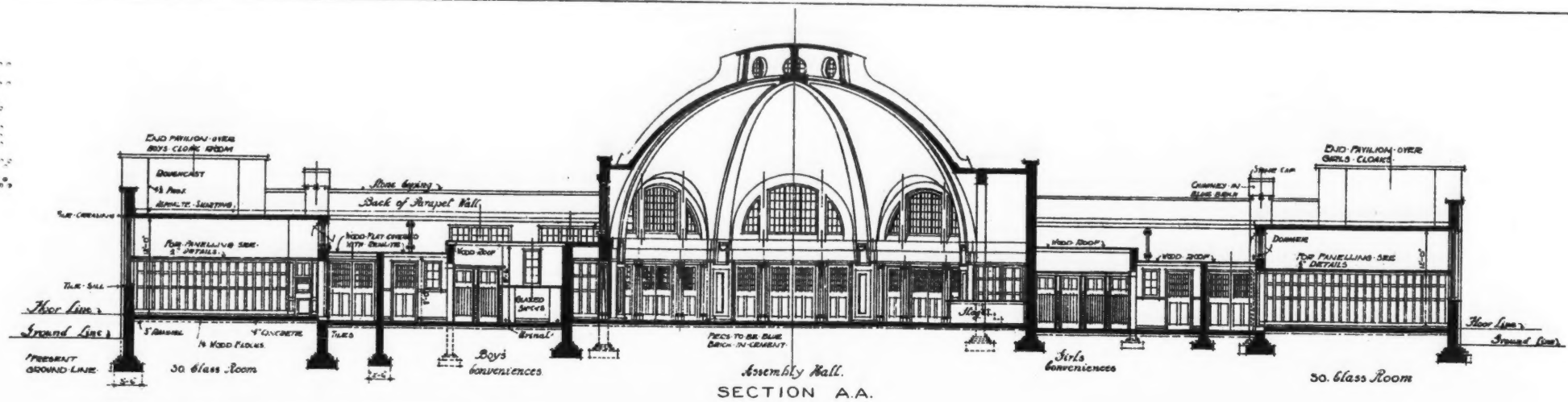
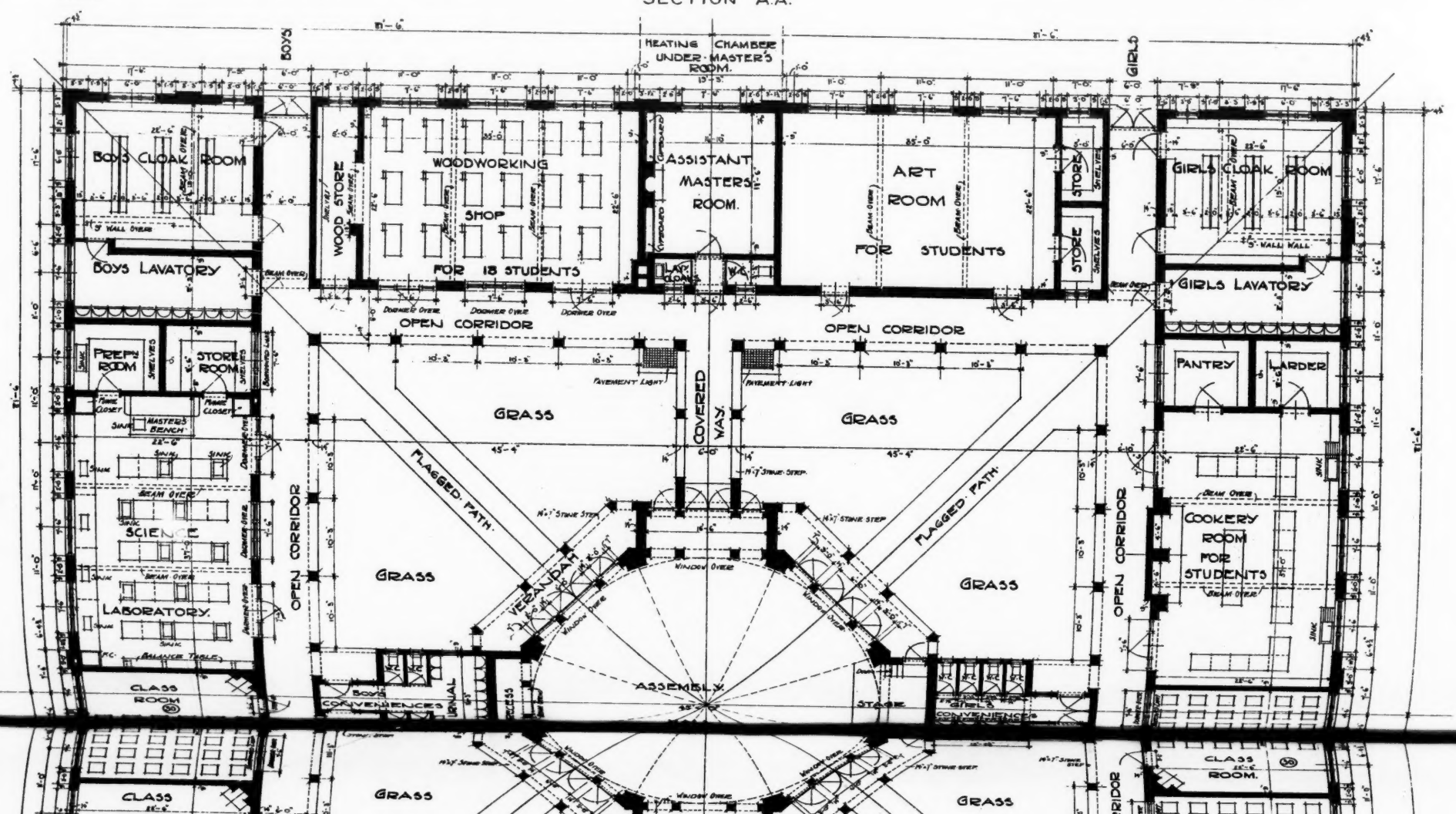
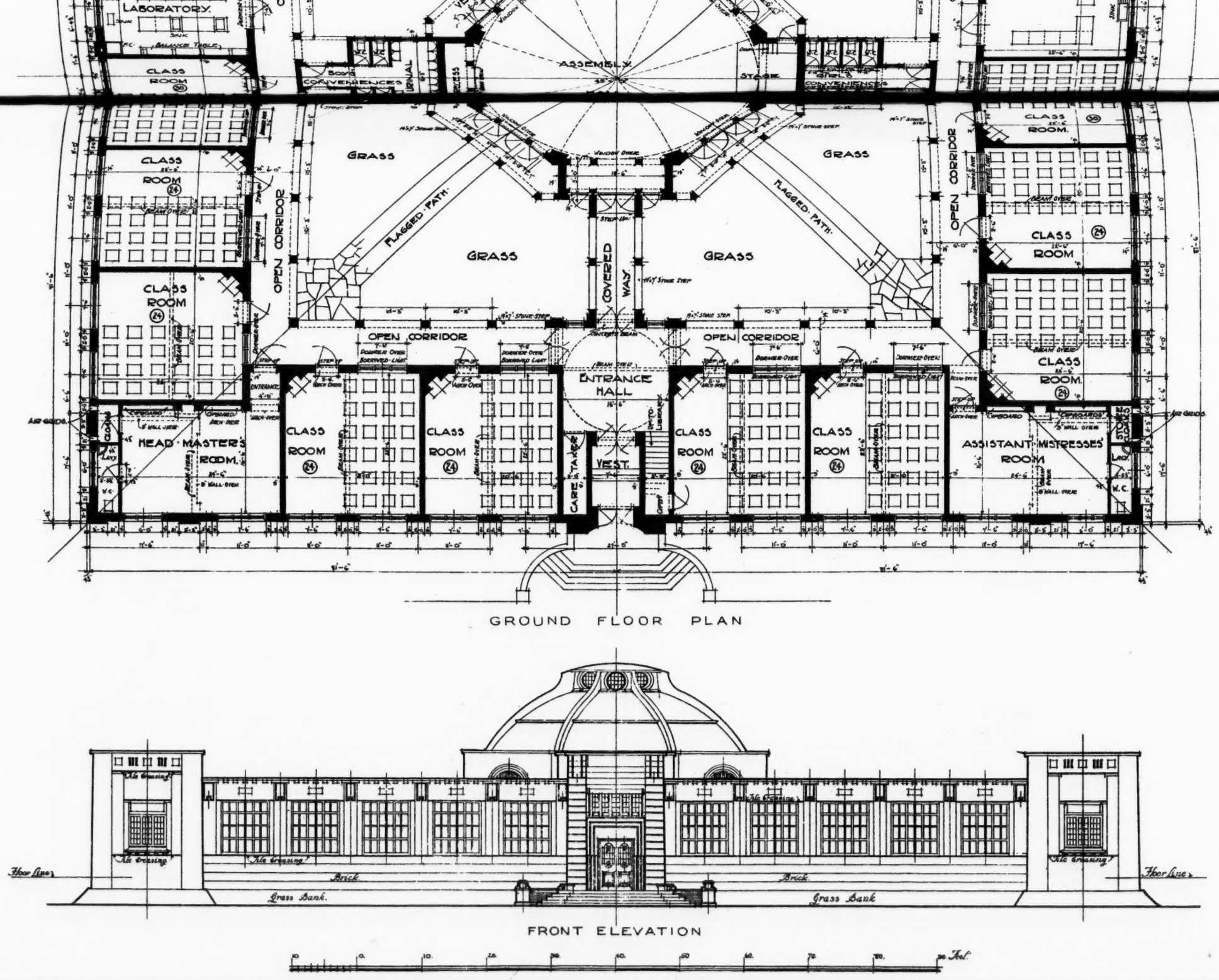

D.J.O. PAVILION OVER BOYS' CLOAK ROOM
BOWCAST
Stone Coping
Back of Parapet Wall
WOOD FLAT COVERED WITH ROOFLITE
WOOD ROOF
GLAZED SCREEN
Urinal
PIERS TO BE BUILT BRICK IN CEMENT
Skylight
CHIMNEY IN BLUE BRICK
SQUARE CAP
DORMER
D.J.O. PAVILION OVER GIRLS' CLOAKS
TILE CREASING
TILE SILL
Floor Line
Ground Line
PRESENT GROUND LINE
5" BRICKWORK
4" CONCRETE
TILES
WOOD PLUGS
30. Glass Room
Boys' Conveniences
Assembly Hall.
Girls' Conveniences
30. Glass Room

SECTION A.A.


BOYS
GIRLS
HEATING CHAMBER UNDER MASTER'S ROOM.
BOYS CLOAK ROOM
WOOD STORE
WOODWORKING SHOP FOR 18 STUDENTS
ASSISTANT MASTERS ROOM.
ART ROOM FOR STUDENTS
STORE
GIRLS CLOAK ROOM
BOYS LAVATORY
GIRLS LAVATORY
OPEN CORRIDOR
PREP. ROOM
STORE ROOM
MASTER'S BENCH
SCIENCE
LABORATORY.
PANTRY
LARDER
COOKERY ROOM FOR STUDENTS
GRASS
COVERED WAY.
FLAGGED PATH.
VERANDAH
ASSEMBLY
Boys' CONVENIENCES
URINAL
Girls' CONVENIENCES
CLASS ROOM



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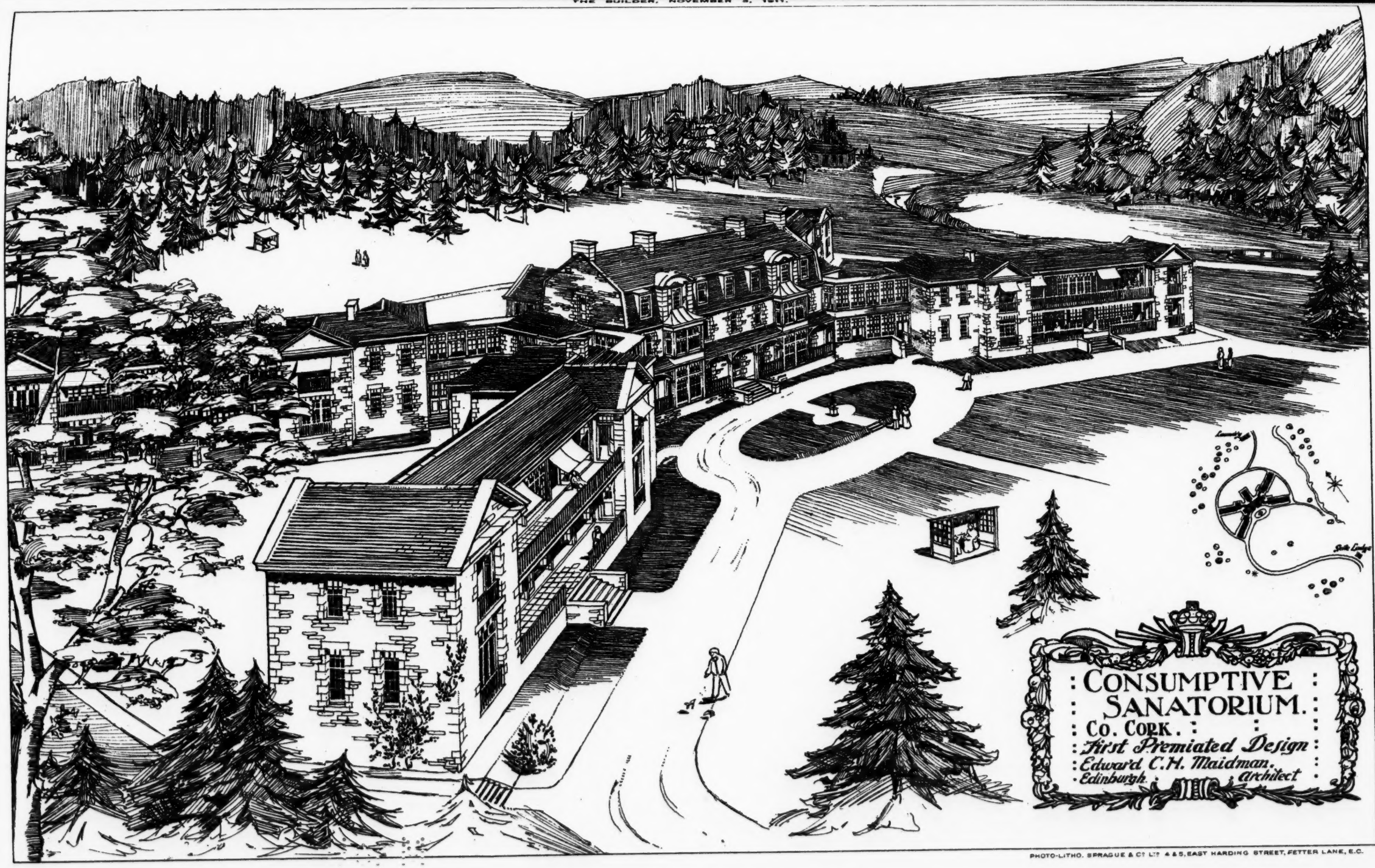
ILKESTON SECONDARY SCHOOL.—Mr. George H. Widdows, A.R.I.B.A., Architect.



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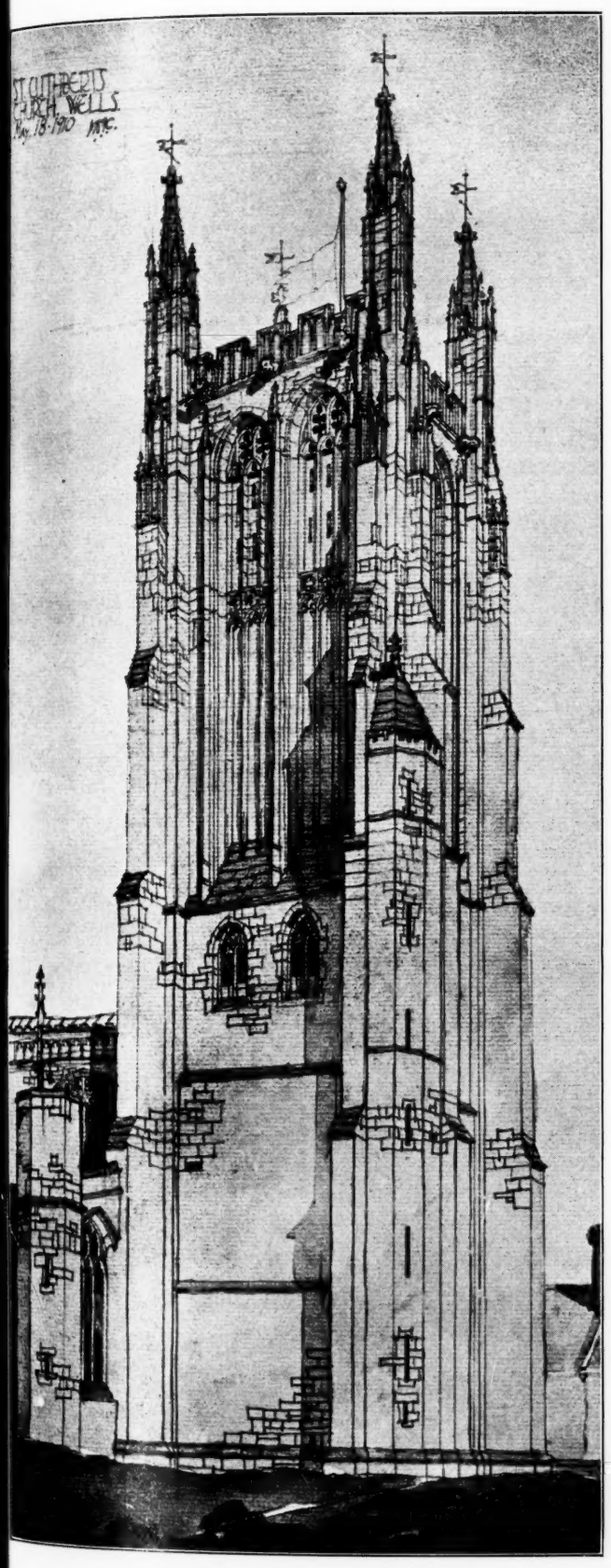

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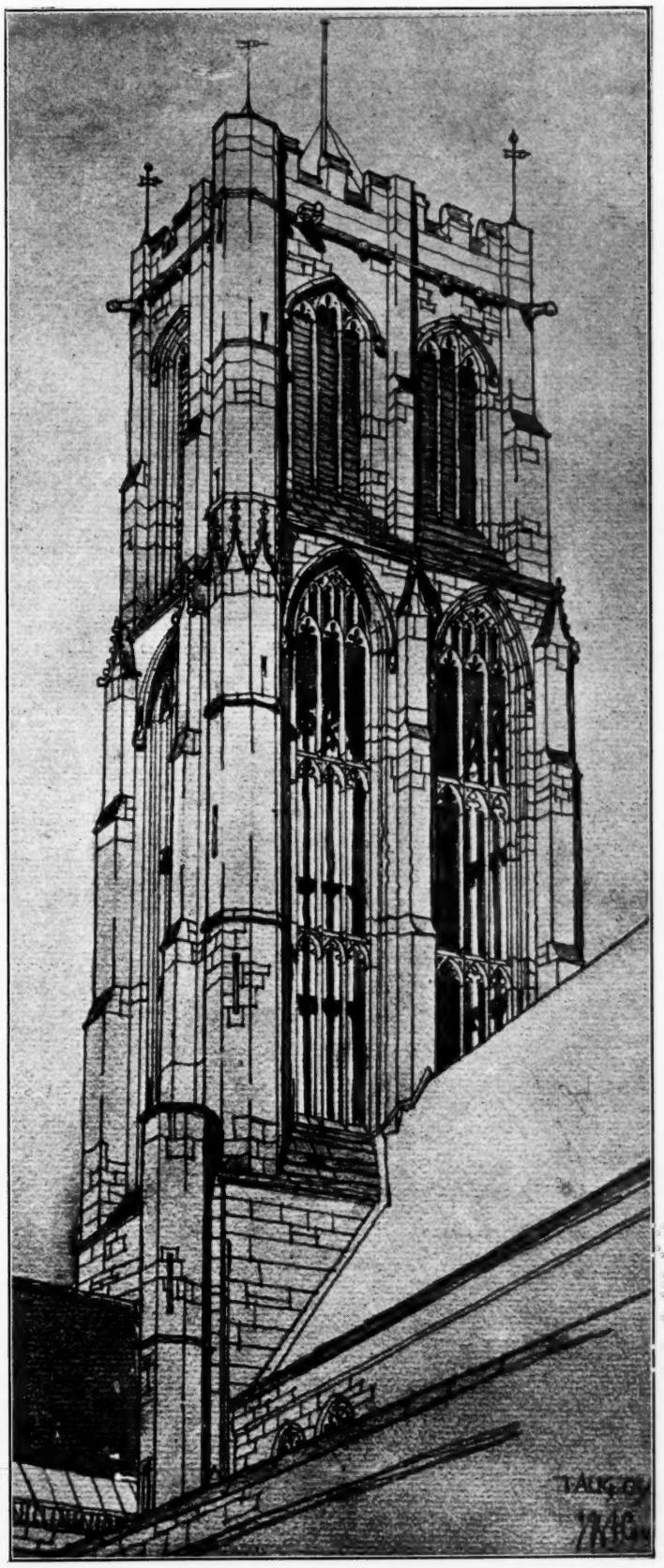

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